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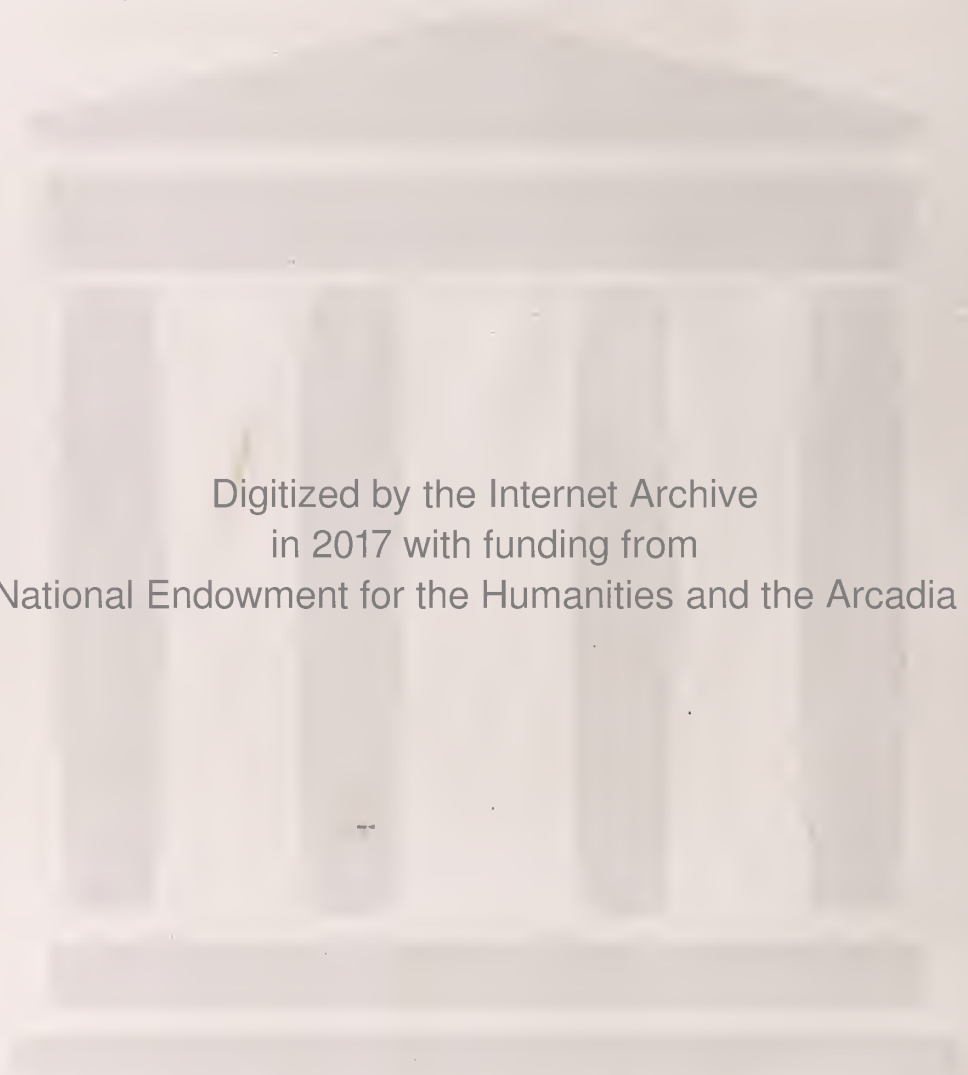


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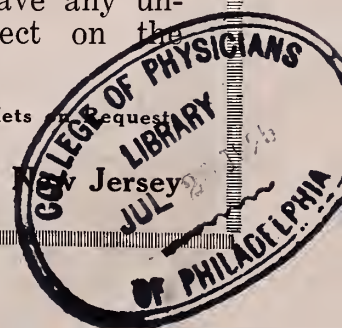


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NASHVILLE, TENN., MAY, 1925

Number 1

RAILWAY SURGERY—A SPECIALTY*

EDWARD T. NEWELL, B.S., M. D., F.A.C.S., Chattanooga.

As is well known the management of all large railroads is divided into departments and prominent among these departments is the Medical Section. These department are supervised by men trained and experienced in their special lines of endeavor.

The Medical Department is no exception and is under the direction of the Chief Surgeon, who by natural attainment and special training is proficient in the handling of all medical and surgical questions pertaining to the successful operation of his department. It is the duty of the Chief Surgeon, not only to supervise the hygienic and sanitary conditions surrounding the thousands of railway employes—to safeguard them from injury—to examine or have examined applicants for employment, but to select surgeons along the lines of his roads to care for the sick and injured employes, passengers, trespassers, etc.

Only by the most careful and conscientious selection of the medical men over his entire system can he maintain his department along a high plane and operate it in a satisfactory manner.

The enactment of adverse railway laws by national and state legislative bodies, strikes, railway accidents, etc., materially add to the general operative expense of railroads. By the careful selection of the railway employe, as well as the proper care of the sick and injured of the railway, accidents can be lessened and unnecessary and avoidable expense curtailed.

The duties of the Railway Surgeon are threefold:

First: Proper selection of employes.

Second: Proper treatment of the injured.

Third: Proper handling of reports, records and legal matters.

First, in examining applicants for employment, the surgeon must select men who are sound physically and mentally. He should not simply fill out the usual form, making a superficial physical examination and send these forms to his Chief Surgeon and Superintendent. The applicant should be stripped and examined thoroughly, noting all defects, and pathology; any tendency to hernia, hemorrhoids or skin lesions. He should make a complete urinalysis, microscopical and chemical, and if necessary a blood Wassermann and x-rays. Contrary to the usual custom, he should

*Chairman's address before the Section of the Tennessee State Association of Railroad Surgeons, Nashville, April 20, 1925.

make a most careful examination of the applicant's nervous system, and if this is below par, he should consider the position for which the applicant applies and reject him if not up to the standard of the requirements. Only by such thorough examinations will future morbidity to the individual and unnecessary expense to the railroad be avoided. To make such an examination as outlined above, it will require the services of a medical man who is not only well grounded but specially trained.

Treatment of the Injured: While railway surgery is in a certain percentage of cases surgery of minor injuries, if these injuries are treated by an inexperienced surgeon the condition will soon become major and the services of an experienced major surgeon will become imperative.

No matter how small or innocent the apparent traumatism or injury may seem, the unseen trauma may be extensive and vital.

To illustrate: You are too familiar with the seemingly innocent abrasion or laceration that later develops a virulent infection, streptococcic malignant edema, tetanus, etc., necessitating wide incisions and amputations, and possibly death.

Or, what appeared to be a simple fracture, with injury to the soft parts, that following immediate approximation of the fragments and application of splints, developed ischemia of muscles, tissue and nerves and resulted in Volkmann's contracture—a most unhappy and unfortunate result. Contrarily—a fracture with little or no injury to the soft parts but with a fragment pressing on the main blood supply, causing gangrene of distal parts, from failure to immediately approximate and relieve the pressure.

Or, a blow to the abdomen with only slight or no external evidence of same, that later developed gangrene of the bowel with rupture, peritonitis and death.

Or, a blow on the head with only momentary unconsciousness, with little or no scalp trauma, the patient to all appearances normal when seen shortly after the injury, and who three or four days later had a sudden secondary hemorrhage, followed by

paralysis, coma and death.

Or, a small foreign body on the cornea removed by a fellow workman with a non-sterile tooth-pick, abraiding the cornea, later to be followed by corneal ulcer and opacity.

Or, more frequently, a man injured in a railway accident who complains only of a broken arm and possibly a contusion on the leg, that you fail to discover for two or three days that he has two or more ribs fractured because he did not complain of pain in that region, and who later develops pneumonia with or without mortality.

Finally, a patient is brought to you with a crushed and mangled limb or limbs, who is in profound shock; hurried amputation successfully removes the limbs but causes the death of the patient.

These and many other conditions confront the railway surgeon in the small town as well as the city, almost daily, and require careful and thorough examinations, and above all sound judgment in the proper handling of such cases. This judgement can and does only come from serious consideration and wide experience, such as is obtained by the railway and emergency surgeon. These cases can not be properly handled by the general practitioner who seldom attends such cases; does not prepare himself by study or attending railway meetings or emergency clinics; nor can a pediatrician, obstetrician, gynecologist, urologist, neurologist, abdominal surgeon, etc., properly care for these cases. This work should be handled by men who do emergency surgery, and who from their experience can think and act wisely and quickly, or by those who when they have made a correct diagnosis and render complete first aid will call to their assistance the proper specialist. While delay in one case may save the limbs and the patient, delay in the other case may cause the death of the patient.

The Railway Surgeon must be equipped for the emergency. In the larger cities he has his team ready to handle any emergency, large or small, on a moment's notice. In the hospital or the clinic where

he works he has at his disposal the proper armamentarium; x-rays, laboratory equipment, blood transfusion outfit, his donors, his splints, sterile emergency package; everything ready for immediate use.

In the smaller town the Railway Surgeon should keep emergency kits prepared for immediate use and have plaster bandages, splints, etc., for the care of all ordinary fractures. He should be ready to render "complete first aid" under any and all circumstances. If his case is a major one, he can later operate or refer the case where it can best be cared for.

Proper Reports, Records and Legal Matters:

The average railway surgeon is so familiar with the immediate and proper handling of initial reports, that his superior has at a glance, a picture of the exact condition of the injured.

The final report in the case should state the exact condition of the patient when he passes out of the hands of the surgeon as well as his "mental attitude," so the company will know the exact status of the patient. Copies of all records are carefully filed for future reference and are of value to the patient and the railway in cases of future morbidity or should litigation develop.

From the above trinidad of requirements

for the experienced Railway Emergency Surgeon, it can clearly be seen that a surgeon qualifying for this position must be one specially trained:

First—In thorough examination of applicants for employment.

Second—In accurate diagnosis of grave surgical conditions necessitating prompt action.

Third—In making prompt, brief, concise initial and final reports and in his ability to take the stand and testify, by the aid of his records, in a manner that will safeguard the interest of his company and with frankness and justice to his patient.

A specialty in medicine is a branch of medicine or surgery where special training and experience are required, more especially with regard to examination, diagnosis and treatment of some special part of the body.

Railway Surgery as a specialty, fulfills all of these requirements, involving a larger diagnostic, surgical and clinical field than any of the other specialties, and frequently must be performed under pressure and under unfavorable circumstances. It is entitled therefore to be classified as one of the "Major Specialities" and should be accredited this classification by the profession.

MEDDLESOME SURGERY*

W. G. KENNON, M.D., Nashville.

I N searching my mind for a subject on which to address the members of this section I have been troubled by the fact that the addresses previously delivered at our annual meetings have covered a majority of the subjects which are of general interest, and I do not wish to emphasize their importance by repetition.

I greatly appreciate the honor of being chairman of this body. The fact that I had to compose a chairman's address has, however, detracted much from my enjoyment of this honor during the entire period since the meeting of 1924.

Times without number, just before I dropped off into the unconsciousness of sleep, there have come to me some startling original idea which seemed most interesting, entertaining and instructive at that time, only for me to find that when examined with the critical eye and mind of the morning that it was beyond the peradventure of a doubt the most uninteresting, uninteresting and tiresome that it would be possible to choose.

After due consideration and consultation I decided to try to develop a daylight idea. Though it may appear to you that the day on which this idea was conceived was not altogether cloudless, yet such being the custom you will have to be patient for the short time which I shall require to say a little on what to me, is, and always has been, a most interesting subject.

During all my professional career there have been two phrases that have appealed to me as having been composed by master phrase makers. Who originated them, I do not know, but one covers them both.

The one of minor import is, "Surgical Gymnastics." The all inclusive phrase is, "Meddlesome Surgery." These two words carry so much meaning in so small compass that it would be difficult to add or subtract anything from them. They include so many things that it would be hard merely to enumerate them without attempting to go fully into each one.

It ideally describes certain operative procedures on any patients, and any operative procedures on certain patients.

We, as specialists in our chosen field, where we are as a class more or less expert, must remember that we are also physicians with the same aims, as far as our patients are concerned, as our colleagues in other branches of our profession. With this idea in mind we should not fail in our duty to those who seek our advice. We should never forget that, after all, it is finally upon our own judgement and conviction that we attempt any treatment or operative procedure.

How often are we consulted by patients who have been advised to have certain surgical procedures which would require the imagination of a Munchausen to conceive them to be of possible benefit for the condition for which it is advocated. How frequently are we confronted with conditions in which surgery has no other possible use than something to do when hope for benefit is through some possibility which lies beyond the realm of reason.

It is not at all infrequent that we are urged by our confreres, and even by our patients themselves, to perform some operation in cases which, Dr. Mosher so well characterizes, as "Surgical Derelicts." I can only advise that we look upon these cases as they should be looked upon, not as

*Chairman's address, read before the Eye, Ear, Nose and Throat Section, Tennessee State Medical Association, Nashville, April 20, 1925.

surgical assets, but as surgical liabilities.

Any operative procedure on such cases can accomplish nothing for the patient, and can, and frequently does, bring reproach upon you, and, through you, upon your branch of the medical profession.

There are too many unavoidable bad results accompanying all surgical procedures for us to court disaster by trying to perform miracles by operative measures.

We must remember always that the tendency of the living being is toward recovery and health, and not toward disease and death.

If we hold fast to this idea we will tend to be less prone to advocate surgical procedure for the relief or cure of certain conditions of which the almost invariable termination is recovery. Let us not become of that class whose reasoning is always based on the "propter hoc" of some surgical procedure. Remember always that there is the distinct probability that it is rather a "post hoc" occurrence.

Too many operations are done upon the nasal septum which can have as their "raison d'être" simply a cosmetic basis. The admirers of the interior of the nasal chambers are entirely too few to justify a major surgical procedure for their delectation.

In a recent paper read before one of our scientific assemblies there were reported three cases of broncho pneumonia and death following tonsillectomy. Of course, the bystander always has a better view than the umpire, but I would like to be informed on at least two of these cases, and if I am ever so fortunate as to meet the author of this paper I am going to ask for information, not by way of criticism, but because I want to know. By what process of surgical alchemy can one hope that a tonsillectomy will restore youth, defer old age, and renew the mental faculties?

Surgery must not be resorted to as a placebo, for in its very nature it is too much like using a loaded firearm for a plaything.

All of you, I am sure, have read papers advocating tonsillo-adenoidectomy in "selected cases" during the active stages of such acute infectious diseases as scarlet fever and diphtheria, not to mention such minor conditions as acute tonsillitis or peritonsillar abscess, and reporting operative results.

All the reports I have seen published gave most gratifying results; that is, the patients recovered. Did these unfortunates recover in spite of, rather than because of the operation to which they were subjected? How many of us would submit ourselves or the members of our families to any such surgical stunt? Of course, the results have been, for the most part, encouraging. The results would probably have been just as encouraging had the surgical procedure been a close shave and a haircut.

I hope that no one here will gather from these remarks that I am a surgical nihilist, for I am far from being a member of any such clan.

Post operative meddlesome surgery, or just mechanical meddlesome surgery in the care or treatment of many conditions is so universally practiced by all of us that an exhaustive and exhausting paper could be written on single phases of it.

Too frequent dressing, too frequent mopping, and other local procedures which serve to deter, rather than hasten the recovery. I acknowledge that it is hard to curb one's curiosity as to the appearance postoperative of, for instance, a cataract extraction, but have less post-operative iritis, etc.

It is hard to refrain from mopping repeatedly, with irritating chemical solutions, the inflamed throats of patients when these individuals return to our office after primary treatment, but I believe if we kept handy on our treatment table a bottle of normal saline, or some equally harmless reagent, and by the use of this medicament gratified our unconquerable passion for mopping, that the inflammatory condition would more quickly subside.

One could continue indefinitely to elab-

orate this interesting subject. How frequently in observing operative procedures are we impressed with the fact that long after all necessary work has been satisfactorily completed, the operator continues to pick or scrape and mop or wash, apparently with a sort of artistic desire to beautify.

We must always bear in mind that any handling of tissues, however gentle, lowers their vitality by the traumatism involved, and that in addition it prolongs without adequate reason, the time required for the operation.

Those of you who have had the fortune to assist at operations in which this prolonged "piddling" was indulged in, will remember the almost uncontrollable desire you felt to express your conviction that enough had been done.

Occasionally we have seen disastrous accidents occur which were totally unnecessary because they happened when these decorative procedures were being carried out. When an operation is completed, therefore, do not let your aesthetic desires interfere with your surgical sense.

Prolongation of any operation adds to its risk, and where this delay is unnecessary it occupies a high standing in the field of "Meddlesome Surgery." Remember that there really is great value, at times, to "scientific neglect."

No paper attempting to touch upon this subject would be, even reasonably, complete if mention were not made of medical literature.

There has descended to us from the ancient days, when the ability to read was an unusual accomplishment, and the Bible was practically the only printed matter, a tendency to believe any and everything which we see in print. Do not, therefore,

write papers unless you have something worth while to say, and do not advise surgical procedures which, while they may be technically interesting and mechanically perfect, have no real value as far as end results are concerned.

If you cannot see reasonable hope of benefit to the health of your patient by resort to surgery, don't operate! Stand squarely by your own judgement and conviction of what to do or not to do in the way of surgery, and do not allow the insistent advice and desires of others to cause you to forsake that stand.

Do not attempt the spectacular surgical stunts which, while in the majority of cases result satisfactorily, do subject the patient to an avoidable and unjustifiable risk.

The questions we have to ask ourselves before advocating any surgical procedure must be: First—Would I, under similar conditions, advise this operation or consent to this operative procedure upon myself or members of my family?

Second—What are the benefits, if any, which we can more or less confidently expect?

Third—Is the patient on whom you propose to operate a fair subject for surgery; that is, are the benefits which will probably, or possibly accrue, sufficiently great to justify this particular patient in accepting the risk?

When you have answered these questions in the affirmative you may proceed, feeling that should the outcome be unfortunate, or the result disappointing, you will suffer regret unmixed with remorse.

For you will have with you that most comforting companion, a clear surgical conscience.

THE USE OF TRYPARSAMIDE IN THE TREATMENT OF NEUROSYPHILIS*

EDWIN W. COCKE, M.D., Supt., Western State Hospital, Bolivar, Tenn.

IN THE latter part of 1919, Lorenz and his co-workers entered into a study of the treatment of syphilis of the central nervous system, with a view to the development and use of new drugs. At the suggestion of Doctor Wade H. Brown they began their study with tryparsamide, the sodium salt of N-Phenyl-glycineamid-p-arsonic acid, $C_6H_4(NHCH_2CONH_2)(AsO_2HONa)$, which was synthesized by Jacobs and Heidelberger (2) in 1915.

The biologic action of this substance has been studied experimentally by Brown and Pearce (3) in normal animals, and in animals infected with trypanosomes and with the spirochetes of relapsing fever and of syphilis.

Further studies with tryparsamide have been made by Moore and his co-workers (4) in the treatment of syphilis, and by Solomon (5) in the treatment of neurosyphilis.

There are undoubtedly other neurologists and clinicians who have been investigating with this drug for some time, but literature upon this subject is limited, and for that reason the publications which have already been advanced, are of unusual significance. Hence, in order that you may become thoroughly acquainted with the work which some of the original investigators have accomplished, I think it advisable to briefly outline some of their most important findings.

We are especially interested at this time in the discussion of the effects of tryparsamide in the treatment of various types of neurosyphilis, and in the results which

we are obtaining, or hope to obtain, from a clinical standpoint. Therefore, before taking up the published reports of such men as Lorenz and his co-workers and Moore and his co-workers, we should first consider what we understand about the clinical condition of a patient, that is, at what stage we shall determine when a patient is recovered, improved, unimproved, in a state of remission, symptoms arrested, etc. Unfortunately, as yet a uniform standard of clinical understanding has not been determined, and at present there does not seem to be any way of arriving at a standardization. Therefore, this great question resolves itself into a matter of personal equation.

Neurosyphilis is a chronic condition with oftentimes indefinite symptoms, progressing slowly and terminating disastrously, or with spontaneous improvement. A period of months or years may be necessary before one can be relatively or absolutely sure that he is not misinterpreting remissions as arrest. Therefore, it is important that we be very guarded as to our tabulation of statistics, and not become too enthusiastic over early reports, for in the treatment of these cases, improvements and arrests are terms which are not easy to define.

Lorenz et al., have reported wonderful results in the treatment of general paralysis, tabes dorsalis and cerebro-spinal syphilis. The results which they have obtained have never been equaled by the use of any other drug. Their report shows that out of seventy-eight cases of parenchymatous neurosyphilis treated with tryparsamide, which includes general paralysis, tabes and tabo-paresis, there were arrested clinically 62.8 per cent, improved 15.3 per cent and remained positive in 1.2 per cent.

*Read before the Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

The cell count in spinal fluid was negative in 62.8 per cent and reduced in 37.1 per cent. Globulin negative in 42.3 per cent, reduced in 50 per cent and unchanged in 7.6 per cent. The Wasserman spinal fluid was negative in 34.6 per cent, reduced in 62.5 per cent and unchanged in 12.8 per cent. Colloidal gold was negative in 17.9 per cent, reduced in 67.6 per cent and unchanged in 24.3 per cent. The results in their cerebro-spinal series were even better, showing arrests in 90 per cent of cases. The majority of their patients were late in the disease, with definite psychosis and hospitalized.

Moore, Robinson and Keidel have likewise, according to their published reports, obtained results that are almost identical to those of Lorenz et al. In their series of twenty-seven cases of parenchymatous neurosyphilis treated with tryparsamide there were arrested clinically 66.6 per cent, improved 14.8 per cent and unimproved 18.5 per cent. Blood Wassermann became negative in 6.6 per cent, reduced in 20 per cent and remained positive in 17.3 per cent. The cell count in the spinal fluid was negative in 65 per cent, reduced in 20 per cent and unchanged in 15 per cent. Globulin was negative in 18.5 per cent, reduced in 48.1 per cent and unchanged in 33.3 per cent. The Wasserman spinal fluid was negative in 29.6 per cent, reduced in 51.8 per cent and unchanged in 18.5 per cent. Colloidal gold was negative in 43.5 per cent, reduced in 26 per cent and unchanged in 30.4 per cent. In only two or three of their cases was the psychosis so severe as to demand hospitalization, all others being treated on ambulatory basis. They have also shown better results in their cerebro-spinal series than in any other type, having arrested 90 per cent of the cases.

Moore et al. (6) later report of 133 patients treated, show that 39.8 per cent remained well, 17.2 per cent arrested symptoms, 19.5 per cent improved, 12 per cent unimproved, 5.2 per cent worse and 6 per cent dead. However, 73 of these patients had been intensively treated just prior to

tryparsamide therapy, and 23 were clinically arrested. The duration of this previous treatment ranged from a few months to five years.

The result of Solomon's eleven months' investigation of more than one hundred cases of neurosyphilis treated with tryparsamide, has not proven as satisfactory from a clinical standpoint as that of his predecessors, nor have his serologic findings been as gratifying. On account of the short time his patients have been treated, he was not able to give an accurate statistical comparison, but the results are his impression based on careful investigation and collation of evidence. He has succeeded in obtaining some serologic improvement in almost all of his cases, but he hasn't had a single case of parenchymatous neurosyphilis to give an entirely negative spinal fluid finding, as the result of treatment of tryparsamide. His reduction of cell count was particularly striking in some cases.

The above investigators have adopted the following rule which they recommend for general application—that every case to be treated with tryparsamide be subjected to careful ophthalmoscopic examination, and that in any cases showing retinal changes the drug be used with great caution. It is emphasized by Moore that the drug should be avoided in all cases in which optic nerve impairment already exists, and that during tryparsamide administration close attention be given to the fundus of the eye and to the sight. He further claims that visual disturbances following tryparsamide have occurred in 17.8 per cent of a series of 241 cases, but in only 2.8 per cent was there any permanent visual injury.

With this brief review as a basis, I wish to present the results obtained by us in the treatment of twenty-one cases of neurosyphilis with tryparsamide, comparing our clinical and serological results with those previously reported. In May, 1924, through the courtesy of Doctor Wade H. Brown of the Rockefeller Foundation of

Medical Research, we began the use of this drug in the Western State Hospital. I had associated with me in this study the members of our present medical staff, and Doctor A. B. Dancy of Jackson, Tenn., who did our ophthalmoscopic examinations. For our ten or eleven months of investigation we were furnished with a very liberal, but not an unlimited supply, of tryparsamide, thus for this reason we are unable to present a larger series of cases. During this period we have given to these twenty-one cases, 335 injections of this drug. I am aware of the fact that the time has been too short to be able to give an absolute and accurate tabular or statistical comparison of the clinical improvement on a percentage basis. The clinical results indicated are our impressions based on careful investigation of evidence. The time is also too short to be able to give accurate statistics from a serological standpoint; however, it is sufficient to give us some index of the results obtained. The conclusions are largely personal and, of course, stand for modification in the future. The patients comprising this series were not selected from the group of mild neurosyphiletics just suitable for the administration of tryparsamide, but were cases selected from both the parenchymatous and meningovascular group, which represent the different types in all stages. The majority, however, were advanced cases of general paresis with definite mental symptoms and mental deterioration. They were advanced in the disease before entering the hospital, and in almost every case some kind of antisiphilitic treatment had been previously administered. However, in no instance was there an intensive treatment given in any case. In two of the cases the disease was so far advanced that the patients died before finishing the first course of treatment. All these patients presented positive mental, neurological and physical symptoms. All these cases were legally committed to this institution as insane patients with the exception of two, these being non-committed ambulatory patients, and referred to me privately. One of these had a very definite

psychosis (general paresis) and was sufficiently mild to permit him to remain at home, and come to this hospital regularly for treatment. The other, an asymptomatic general paretic with comparatively no mental symptoms, was also able to come regularly to the hospital for treatment.

All our cases prior to the administration of tryparsamide were subjected to a careful physical, mental, neurological and serological examination. Having been warned of the danger in giving this drug where there was optic nerve impairment, we were especially careful to obtain an accurate ophthalmoscopic examination in each case. We were also careful to see that the spinal fluid and blood tests were accurately made. A urinalysis was made in every case, and in no instance was it necessary to make a functional kidney test. In none of this series of cases did we administer the drug where it was contra-indicated.

Our procedure in the administration of the drug is to dissolve three grams of tryparsamide in ten cc of sterile, freshly distilled water, and to inject the total amount intravenously, this solution being given at weekly intervals for a period of eight weeks. At the same time mercury salicylate is administered intramuscularly in one grain doses. The mercury is given three days before the tryparsamide. A total of nine such injections alternated with eight injections of tryparsamide comprise the course. It has been our practice to give the patient a rest period of eight weeks, when a second course is repeated. If after this second course and another rest period of eight weeks, there is continued evidence of activity, or the case is still serologically positive, a third course should be given. In none of our cases have we completed the fourth course; several of our patients are now on this course. In order to carefully check the progress of our patients clinically and serologically, a mental test and a neurological examination is made following the rest period of each course of the treatment and spinal fluid examinations and blood tests are also made.

In none of our cases have we observed

any permanent bad effects or untoward reaction following the administration of the drug, with the exception in a few cases a slight nausea and headache, which cleared up within a few hours. In one case a slight optic neuritis was noted following the first course of treatment, but not severe enough to cause us to discontinue the treatment. Since that time the same patient has finished three courses with no optic nerve impairment or visual defect. In another patient, a severe case of jaundice was observed two weeks following the first course, which lasted for several weeks. The history of this case will be referred to later. In several of our advanced cases of general paresis there was extreme nervousness, exaltation, excitability and general disorientation immediately following the administration of the drug. In two or three instances the patient became violent for a week or more. We found that a discontinuation of the drug in these cases would clear up the symptoms, and upon re-establishing the treatment the same mental conditions would recur. But if we continued to administer the drug persistently, notwithstanding the aforesaid violent mental symptoms, after a period of eight weeks (more or less) the patient would gradually return to the mental condition noted previous to the administration of the drug, and almost every case showed marked mental improvement. In no case were these violent mental symptoms permanent. A noteworthy feature which has been observed in practically all our patients is the gain in weight in a most striking fashion, some gaining rapidly after the beginning of the first course of treatment, others later on, while in quite a number a general physical as well as mental improvement begins to show up early.

The time engaged in this investigation has been entirely too short to make other than a preliminary report. However, I am hopeful in another year we will be in a position to give a more complete and accurate analysis. Tryparsamide has been recently released to the public by the Rocke-

feller Foundation, so we will be able to obtain a sufficient supply to carry on our investigation more intensively and extensively, thereby reaching practically every case of neurosyphilis in our hospital. In view of the limited number of patients comprising this series, I am including both the parenchymatous and meningovascular types under one heading, as by far the majority of our cases are of the former class.

In the twenty-one cases of our series there were arrested clinically 23.8 per cent, improved 43 per cent, unimproved 23.8 per cent and died 9.4 per cent. The blood Wasserman became negative in 14.2 per cent, reduced in 38 per cent, remained positive in 43 per cent and increased in 4.8 per cent. The cell count in the spinal fluid became negative in 23.8 per cent, reduced in 47.6 per cent and unchanged in 23.6 per cent. Globulin was negative in 19.1 per cent, reduced in 28.6 per cent and unchanged in 52.3 per cent. The Wassermann spinal fluid became negative only in 4.8 per cent, reduced in 43 per cent and unchanged in 52.3 per cent. The colloidal gold was negative in 14.4 per cent, reduced in 33.3 per cent and unchanged in 52.3 per cent. As shown from this tabulation our experience has not proven as satisfactory from a clinical standpoint as that reported by other investigators, nor have our serologic findings been hardly as gratifying. In only one of our cases were we able to show a negative Wassermann spinal fluid and in this case there was absolutely no improvement clinically; however, we can definitely conclude even at this time that tryparsamide gives evidence of being the most effective treatment used in any of the types of neurosyphilis.

In summing up the serological findings as obtained by us, we conclude that there is a prompt, definite and striking effect on the cell count. The effect of the globulin is not particularly satisfactory. The effect on the spinal fluid Wasserman reaction, with the exception of two cases, is not very striking. The colloidal gold curve has been on the whole of little consequence, al-

though in a few cases some good results have been shown.

A report of the following cases will be of interest both from a clinical and serological standpoint:

Case 1: M. S., aged 73. Russian Jew. Merchant. Memphis. Admitted to this hospital July 3, 1924. Family history negative. Was always healthy. Denied any venereal infection. Moderate drinker. Onset present trouble, one year previous to commitment; very irritable and excitable. His family unable to control him; was constantly wandering away from home. Memory defect. Positive blood Wassermann and spinal fluid. Cell count, 1,100. Examined and treated by Doctors Somerville and Rudner. Six doses of neo-salvarsan Ki and Bi administered. No improvement. On admission here, examination revealed typical writing and speech defect. Tremors of face, tongue and fingers. Pupils unequal, irregular and no reaction to light. Reflexes exaggerated. Memory defect. Apprehensive. Impairment of judgment. A clouding of consciousness. Delusions. Some deterioration. Physical examination negative. Blood and spinal fluid Wassermann four plus. Cell count, 25. Marked excess globulin. Colloidal gold 5555432100. Patient completed one course of tryparsamide with mercury salicylate. Following this course he began to improve mentally and physically; gained twenty pounds in weight. November 5th his daughter carried him home for a visit. This improvement continued to such an extent that his wife and daughter considered him recovered and refused to return him for further treatment. Dr. Rudner saw him and considered him clinically arrested. I received a letter from his daughter on March 8th saying that he was in good condition and appeared to be perfectly well. He was directing his business affairs as usual. Diagnosis: General Paresis, clinically arrested symptoms.

Case 2: G. C. W. Man, aged 32. Banker. Memphis. Non-committed, ambulatory patient referred September 1, 1924. Family history negative, except one brother mentally defective. Patient began dissipating early in life. Drank considerably. Contracted syphilis sixteen years ago. Treated six months; discharged as recovered. In 1922 cashier of a bank in a Western state; suddenly, while at work, had an Apoplecticiform attack; unconscious several hours. In several days was carried to a private sanitarium; remained three months. Positive blood Wassermann and spinal fluid. Neurological and mental symptoms positive. Lost forty pounds in weight. Was given six doses of salvarsan and mercury. Returned to Memphis; no improvement. Was then given twenty-four doses of salvarsan and like number doses of mercury. No improvement noted. Six months following this treatment patient consulted the writer. He was undernourished. Despondent and depressed. Memory and judgment defect. Change in disposition. Delusions (?). No hallucinations. Slight tremor of tongue and fingers. Slight speech defect. Pupils unequal and irregular. Reflexes exaggerated. Positive blood Wassermann and spinal fluid. High cell count. Colloidal gold and globulin positive. One course of tryparsamide given intravenously with mercury salicylate intramuscularly; gained 15 pounds in weight before course completed. Two weeks following this course severe case of jaundice developed, which lasted one month; gradually faded

away. It was concluded that this jaundice condition was the result of treatment, and on this account patient refused to return for further treatment. However, his mental condition had apparently cleared up. His father thinks he is in good condition. He is working at the present time and doing well. Diagnosis: General Paresis, symptoms clinically arrested.

Case 3: J. C. Man, aged 36. Memphis. Clerical work. First admission to this hospital August 11, 1919; discharged September 11, 1919. Family history negative with the exception of several members of his immediate family neurotic. Patient was always healthy. Twenty years ago limbs cut off by train. Was always nervously inclined. Bright in school. Drank considerably. Denied venereal infection. Onset of present trouble, one year previous to first commitment, gradual onset, excitement with elation, grandiose delusions during which transitory states of depression. Neurological and physical examination not made on account of his family removing him from the hospital earlier than expected. Readmitted March 26, 1923, in an exalted state, very talkative. Some mental deterioration. Conversation incoherent. Typical writing and speech defect. Tremors of tongue and fingers. Pupils unequal and irregular and no reaction to light. Reflexes exaggerated. Blood Wassermann negative. Wassermann spinal fluid four plus. High cell count. Colloidal gold and globulin positive. Immediately following his last commitment an intensive salvarsan course administered intravenously and mercury innunctions. No improvement mentally or serologically. June 20, 1924, blood Wassermann negative. Spinal fluid four plus. Fifty-three cells. Globulin marked excess. Colloidal gold showing a luetic curve 11222100(5). Three courses of tryparsamide with mercury salicylate given, a total of twenty-four injections of each. January, 1925, six weeks after completing second course, the blood Wassermann was negative, as was also the spinal fluid Wassermann (Wassermann spinal fluid reduced from four plus to negative after two courses of tryparsamide and mercury). Cell count, 14. Globulin moderate excess. Colloidal gold unchanged 1123321000. Gained considerably in weight, but absolutely no improvement mentally. Diagnosis: Cerebro-Spinal Syphilis.

Case 4: Mrs. L. P. Aged 36. Housekeeper. Non-committed, ambulatory patient referred October 1, 1924. Family history negative. Patient was always healthy, but of delicate appearance. Husband infected her with syphilis nine years ago. Consulted physician immediately during the secondary reaction. The only treatment administered was mercury protoiodide for a few weeks. Symptoms cleared and no further trouble until one year ago began to have severe headaches which continued. Hysterical at times. "Feelings" easily hurt. Insomnia. Easily fatigued. Poor appetite. Loss of weight. During this time eyesight became slightly defective; one pupil was larger than the other. Symptoms continued. Five months later became very weak; headaches, nervousness and continued to lose weight. A little fever developed, which continued for several weeks. It was at this time that the writer was called in consultation. Same mental symptoms present. One pupil larger than the other, unequal, irregular and reacted sluggishly to light. No tremors. Reflexes exaggerated. Wassermann blood and spinal fluid four plus in all dilutions. High cell count. Globulin marked excess. Colloidal gold 5555432100. Two courses of trypar-

samide and mercury given. Following the first course, all the nervous symptoms cleared up entirely. Neurological symptoms improved. Gained eleven pounds. Patient stated that she was in better physical health than in several years. Also she was less nervous. Pupils much improved. Following the second course, serological improvement noted. Blood Wassermann two plus. Cell count negative. Wassermann spinal fluid reduced to negative in .1 dilution. Three plus in .5 dilution. Globulin reduced. Colloidal gold 5444432100. For the past few months the patient has been attending to her household duties and has cleared up mentally and physically. Diagnosis: A symptomatic General Paresis, clinically arrested symptoms.

SUMMARY:

Tryparsamide and mercury salicylate given according to the method herein described, are especially effective in the treatment of early parenchymatous and meningovascular syphilis, and of all other forms of neurosyphilis. In our experience, it is more effective than any other form of treatment used.

Tryparsamide when employed in dosage of three grams produces no local and practically no general symptoms, either immediately thereafter or later and can be used to an advantage in aged patients and also in cases in which the patient cannot tolerate other arsenicals—as in case number one in which a man 73 years of age with a definite psychosis of a year or more duration, with positive serological findings, showed striking results.

We have observed no bad effects from the administration of this drug. Tryparsamide should not be administered where there exists some active pathological process affecting the optic nerve. For this reason it is necessary that a careful ophthalmoscopic examination be made of all patients in whom its use is contemplated. Notwithstanding the fact that our experience with tryparsamide has not proven as satisfactory from a clinical and serological standpoint as that reported by other investigators, we do definitely conclude that this drug is the most effective so far advanced in the treatment of any of the types of neurosyphilis.

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OPHTHALMOSCOPIC EXAMINATION DURING TREATMENT WITH TRYPARSAMIDE*

A. B. DANCY, M.D., F.A.C.S., Jackson.

IN selecting patients for treatment with tryparsamide, it is highly important that each patient is given thorough clinical and serological examination and that as complete history as possible be obtained.

The one definite contraindication to the use of the drug, as far as is known at the present time, is the existence of some pathological process affecting the optic nerve; and for this reason it is urged that a careful ophthalmological examination be made of all patients in whom the use of tryparsamide is contemplated. The majority of those doing original work with tryparsamide advise against the use of the drug in patients that show any abnormality of the optic nerve. In like manner it seems possible that existence of syphilis in parts of the body other than the central nervous system may prove to be a contraindication for the use of tryparsamide, so that the drug should be used in such cases in conjunction with or after treatments with some more vigorous triponemacidal agent.

In discussing the use of tryparsamide, I would like to impress upon you the fact that it is not a powerful triponemacidal agent, and that its use in treatment of syphilis is based on other considerations as follows: Its high degree of penetrability and peculiar biological relationships that obtain in infections of the central nervous system.

If this conception of its action is kept in mind, we can account more readily for the symptoms occurring in the optic nerve and the retina. The evidence at the present time would indicate that the greatest

benefits are to be expected in cases of paresis, meningo-vascular syphilis and tabetics.

As ophthalmologists, we concede the changes in the optic nerve in syphilis of the central nervous system, and we are able to watch with a degree of accuracy the changes that take place during the administration of other treponemacides, but until such time arrives as we have collected sufficient data concerning changes that take place in the optic nerve, manifested by disturbances of vision within twenty-four to seventy-two hours after administration of the drug, we will not be able to make a final report.

The disturbances in vision usually appear in the form of dimness or blurring of vision and rarely lasts for more than a few days, and it is needless to say that, with our somewhat limited experience with tryparsamide, we, as ophthalmologists, should advise that the treatment be discontinued in those patients on which the impairment of the vision appears in the form of dimness or blurring. The possibility of aggravating incipient injury to the optic nerve would warrant the advice that patients be warned of its occurrence and also warrant us in advising the syphilographer of the possibility of a permanent injury to the optic nerve in those patients who are given repeated large doses.

There is undoubtedly a possibility of toxic injury to the nerve if the symptoms referable to the drug are ignored. Yet, with the data that has been accumulated, and the frequent symptoms referable to the visual tract, I feel that we have a drug that has a marked selective action on the central nervous system, and having this

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high degree of penetrability and selective action, it has a most potent influence and will serve us in those cases of optic nerve pathology that seem to respond so poorly to other treponemacidal agents.

We are warned against undue optimism as yet. The literature would convince us that in tryparsamide we have a drug during the use of which we should make frequent ophthalmological examinations and collect all the valuable data relative to the changes in the fundus. I feel sure that we have found a drug that will stay optic neuritis of specific origin and assist us in making it possible for the syphilographer to use this new and valuable agent.

In discussing the ocular changes I must confine myself to those cases treated by tryparsamide and I will not attempt to compare the ocular changes that take place during the use of arsenicals other than tryparsamide.

The optic nerve may be directly attacked by syphilis, it alone being diseased. In other cases only the interstitial portion of the nerve is affected, as in a gummatous neuritis in the form of a perineuritis with a gummatous interstitial neuritis which descends slowly to the orbital part of the nerve. Simple optic neuritis is coincident with tabes and as a rule visual disturbances accompany pallor of the disks; yet all of us see pallor of the disks lasting over a period of years without marked disturbances of the vision. Very rarely do we have visual disturbance without disk changes. I realize that we do have structural peculiarities although simply atrophy may develop later in tabes.

In considering the contraindication for the use of tryparsamide I have considered as a foundation the contraindication as given by Behr, as follows: "Diminished central vision; loss of color vision with normal or abnormal form fields; high grade concentric contraction for form and color and well marked simple optic atrophy." It is the opinion of the majority of ophthalmologists that the same nerve fibers supply both color vision and visual acuity.

In the use of tryparsamide, the changes in vision that take place in the cases that were well advanced were in proportion to the frequency of the administration of the drug and the disturbance in vision were for color, and also visual acuity and were described as blurring and dimness of vision by the patient. In none of the several cases observed by me were there any permanent changes in the vision or injuries to the optic tract.

These cases reported were selected in an institution as cases suitable from a seriological standpoint for the administration of tryparsamide, and I especially avoided those cases in which there were decided degenerative changes in the retina and nerve. The literature on the subject is full of opinions among eminent ophthalmologists that optic nerve involvement is an absolute contraindication for the use of tryparsamide. In the cases I examined I had the opportunity of seeing them at short intervals following the use of tryparsamide and in none of these selective cases were there any permanent lesion or marked residuum. It is generally believed that tryparsamide causes a toxic amblyopia due to retrobulbar neuritis; yet these cases in which there was a distinct optic atrophy selected, the vision remains the same and the fields decreased temporarily but not permanently.

The few cases I have selected from a series of twenty-one cases I have examined show a normal fundi and other fundus changes found in examination during the use of tryparsamide. In the cases other than the illustrative cases given, I have found the visual fields contracted peripherally and the vision diminished.

In all the cases treated in the institution, I advised that the treatment be stopped as soon as any changes in the vision of fields could be demonstrated. It is my experience that the changes in vision and fields are more extensive in untreated syphilis than in cases treated with tryparsamide. All the ocular changes take place as frequently during the use of other arsenicals, and the use of tryparsamide is not contra-

Case	Previous Treatment	Diagnosis	R	L.	Fundi	Fields	Changes During Treatment
1—	Intensive	Syphilis Central Nervous System	20/40	20/50	Pallor both choroidal changes	Decreased	Vision diminished temporarily. Fields decreased temporarily but returned in two months
2—	Intensive	Syphilis Central Nervous System	20/40	20/30	Slight pallor both disks opacities both lenses		No change in disks during treatment. No fields taken. No decrease in vision.
3—	None	Syphilis Central Nervous System	20/20	Nil	Right normal Left pallor of disks of Central Choroiditis	Right normal. Left unable to take fields	No change
4—	None	Tabes	20/60	Cf	Pallor of disks	Unable to take fields	No change
5—	Intensive	Syphilis Central Nervous System	20/30	20/50	Simpli-Optic Atrophy	Contraction of fields Loss of color vision	Progressive decrease of color fields and diminished vision. No improvement last examination
6—	None	Syphilis Central Nervous System	20/30	20/50	Optic neuritis	Unable to take fields	No change in vision No field taken
7—	None	Syphilis Central Nervous System	20/20	20/20	Slight Optic neuritis	Normal	No change in vision or fields
8—	None	Syphilis Central Nervous System	20/20	Nil	Right normal, Left neuritis atrophy	Right normal. Left no fields	No change in Right: Left, none
9—	None	Syphilis Central Nervous System	20/20	20/20	Optic neuritis. Both slight	Normal	No change for vision or fields at last examination

indicated in my opinion where we have fundus changes. In the cases treated at the institution, we are of the opinion that tryparsamide is not contraindicated, as stated before, in any fundus condition, and it is our opinion that the changes in vision and fields are temporary and that the value of tryparsamide with its penetrability and selectivity for new tissue outweighs any possible objection to its use in any cases of syphilis of the central nervous system.

I remember when salvarsan was first introduced, we had many cases of optic nerve disturbances following the use of atoxyl and other arsenical preparations and the impression prevailed that such conditions contraindicated the use of salvarsan, which we later found not to be the case.

I am indebted to Dr. Edwin W. Cocke, Superintendent of the Western State Hospital at Bolivar, Tenn., and other members

of the medical staff for their co-operation during my ophthalmoscopic examination. I have selected only nine cases from the twenty-one cases treated as I felt that these cases were typical and represents the types in all of the stages found in the twenty-one cases examined.

My conclusions in reference to fundus changes during the use of tryparsamide are subject to modification in the future as the time is too short to give accurate statistics as to final changes in the fundus and I make this report rather as a preliminary report of my findings during the examination and treatment of this series of cases.

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VISCERAL REFLEXES IN DIAGNOSIS*

R. B. WOOD, M.D., Knoxville

FEW papers have ever been written in which the essayist did not emphasize the importance of careful physical examination, and there is no one among you who belittle the value of such procedures, and yet in spite of all exhortations and warnings, an important physical sign frequently slips by which, if followed up, gives evidence of altered function or pathological conditions. Older clinicians were adept in picking up vague changes because they depended on history and physical signs for their diagnosis—a condition now that is just as essential, but at times evinces a tendency to be neglected, owing to ease in accepting another's laboratory findings. The fact that we may at times depend on the laboratory and mechanical devices for diagnostic purposes is no justification for its employment to the giving up of routine and careful percussion and of auscultation. Clinical medicine will probably never become the servant of the laboratory, and today the advance in the latter offers no excuse for such a step. Clinical medicine will most likely always hold first place, and the relief of clinical symptoms will always be more in demand by the sufferer than the investigation of the cause. The patient sees no relation between pain and the laboratory record, and neither is he interested in the correlation of comparative data. He forcibly brings our attention to the fact that "the patient has the disease."

From the standpoint of the physician, we have been interested in various paths, many of which have led us in a direction opposite that which we sought—namely, an understanding of the ways in which disease expresses itself, or functional pathology.

There can be, however, and there need be no choice between the methods used for gathering all the information possible. We need all we have and would welcome more, and we are not yet ready to lay aside as unnecessary the evidence we may gain by physical examination. We have access to the rich experience of the old clinicians, and we have the additional aids of modern achievements. The combination should enable us to make more rapid progress as physicians. "It is the age of application of laboratory data to clinical medicine." (1).

Diagnosis is arrived at by a correlation of abnormal findings, which may include symptoms, signs and altered functions. The scientific cure of the process demands a knowledge of the cause of all the abnormal findings, and it entails a study of the clinical picture or of the ways in which the disease expresses itself.

Not only must normal conditions be known, but the agencies producing and maintaining normal conditions must be understood and what factors influence or produce an altered physiological process. The latter we know to be the result of chemical or nerve force; but calling to mind the many agencies which directly or reflexly may originate stimuli, it leaves us bewildered when we delve into depths of physiological processes of the human body. Of nature's various ways of presenting abnormal processes, she constantly uses one, and that is the autonomic system.

McKenzie states: "Symptoms practically always express themselves in a disturbance of function on the part of tissues controlled by the vegetative nervous system, but it is unknown whether these are the result of nerve or chemical stimulation." (2).

Basing the conception that normal activ-

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ity is maintained through reflex nerve action, it then should in some way become manifest through some disturbance in normal reflexes. This has opened a wide field for study, and such men as Eppinger, Head, MacKenzie and Pottenger have contributed valuable data. The localization and segmentation of the nervous system by Head, and the recent excellent work of Pottenger have explained many heretofore little understood conditions,

The study of the vegetative nervous system is comparatively new, but the result of its disturbance is as old as disease. Anatomically and physiologically, it is composed of two portions—the sympathetic, arising from the Thoraco-lumbar segments, and the vagal from the Bulbo-sacral outflow. Though these arise from the ganglia outside of the central nervous system, they both are not only intimately connected to each other, but to the cerebrospinal system through the white and gray rami communicantes. This system presides over all vital functions and was a development of the demand of the higher forms of animal life, and embryologically is closely related to the glandular system that furnishes the internal secretions. It may be possible for one to maintain life, but with each working in co-ordination, equilibrium is more easily and efficiently maintained in so complex an organism as the human body. These two systems, owing to their intimate relationship, may on stimulation produce identical general symptoms and in turn may be effected by similar stimuli. Of the varied ways in which the vegetative system may be stimulated, I mention only one, and that deals with those conditions arising through inflammatory conditions, either acute or chronic, and manifested in the peripheral distribution of the nerves.

I refer to two symptoms and one sign, both the result of irritation—namely, pain, hyperaesthesia or hyperalgesia and muscular degeneration.

Pain, though located in any portion of the body, is produced constantly in the same way. It, of course, is modified by

many factors, and its intensity is also variable. The importance of its study and the interpretation is obvious when ninety per cent of all diseases have this as a symptom at some time during their course. Its production depends on presence of a proper stimulus and integrity of the receptive, the conveying and the interpreting apparatus. Pain is so inextricably mixed in its relationship to other sensations that its separation is difficult. Sensibility is of three types—namely, deep, protopathic and epicritic (13), and in connection with pain we are dealing with the protopathic type.

Of most interest to the diagnostician is the distribution of pain, its origin and radiation, and in disease of the viscera we are wholly dependent on its reference. This involves a close study of the distribution of sensory nerves, of the segmentation of the body and what is termed the “viscero-genic reflexes.” (3). By the latter is meant a reflex manifesting itself as a result of stimulation of visceral or vegetative nerves, whose distribution is to every important organ of the body. Such a reflex may be sensory, motor or trophic, although in the true sense of the word a true reflex implies a motor element. (3). In case of organs whose position is such that acute sensory perceptions are unnecessary and which depend on vegetative nerves for the conduction of sensation and the intercalated neurons for their transference to the somatic system, we find that epicritic sensation is absent. This, according to Head (4), accounts for the referred type of pain in visceral disease.

The viscerosensory reflex deals with pain and is a very important point in diagnosis only when properly interpreted. Though the viscera are incapable of perceiving the usual modes of pain, in disease an adequate stimulus does arise, which is carried by the different automatic systems to the dorsal or other ganglia where synapse takes place with the afferent somatic neurons, thus establishing the connecting link between the two systems and allowing consciousness of pain to exist. (5). A con-

stant bombardment by stimuli of these somatic neurons produces a state of hyperirritability and what would once have probably been an unnoticed stimulus now becomes abnormally painful.

A constant finding in the viscerogenic reflex is seen in the relation of involved somatic areas to the diseased viscus. Abnormality of an organ produces pain in only certain regions, which can be explained through the relationship of their nerve supply. The impulse from the afferent sympathetic making synapse with afferent somatic through the intercalated fibers usually is in the same segment, but not constantly.

For instance, pain arising from pleural irritation is reflected over the area supplied by the nerves arising from the first to the twelfth thoracic segments. That coming from the lungs themselves is reflected most often over the distribution of third and fourth cervical and is confined to the area above the second rib anteriorly and spine of scapula posteriorly. In this region one may note an apparent discrepancy in regard to the reflexes in that the pain is confined to region above mentioned, while one notes a hyperalgea or increased sensitiveness of skin over the whole upper chest and shoulder girdle. This condition is the result of involvement of sensory nerves supplying the muscles of the shoulder girdle, and is a "deep" pain, the explanation being due to the different distribution of nerves going to the skin and those to the muscle. (6).

Pain located about the epigastric region may arise as a result of inflammation in any area supplied by nerves, whose fibers are connected with the solar plexus. The pain in acute conditions is diffuse and, according to Lennander (7), is due to diffuse peritonitis or lymphangitis and the irregularity of associated peristaltic action, especially when coming into contact with sensitive peritoneum. Though perhaps this is a plausible explanation, it seems that the diffuse character of the pain may have a better explanation. The impulse arising

from the acutely inflamed abdominal organ are carried over the afferent sympathetic and para sympathetic fibers to the posterior root ganglia of the fifth to the ninth thoracic spinal segments through the intercalated neurons to this portion of the cord and reflected through the thoracic spinal nerves. The diffuseness of the pain and its reference to the epigastric region is the result of the impulse and due to its overflow into the neighboring neurons. The excessive peristalsis is not part of the original cause of pain and is the result of a stimulation of the para sympathetic nerve endings with the production of a visceromotor reflex. Many of the other associated symptoms of the acute inflammatory reaction can be explained through the sympathetic and vagal reflex systems.

In the region of the head and face one has an abundance of evidence of the role of the sympathetic system in regard to sensory reflexes, especially to pain. Though the fifth and seventh nerve are associated with sensory phenomena, the rich sympathetic supply through the internal carotid plexes to the Gasserian ganglion, the sphenopalatine, the ciliary ganglia and the otitic, all give proof of their close connection. Frazier demonstrated the production of pain through stimulation of the periarterial plexus of the common carotid—that is, within the distribution of the trigeminal nerve. In the pelvis one has opportunity for the study of visceral reflexes in the pain of dysmenorrhea for which no demonstrable pathology is found. The mode of its production, however, is different in that no cause is apparent, but the relief obtained from the administration of drugs which paralyze sympathetic nerve endings, coupled with the known fact that only the sympathetic fibers supply the ovaries and the body of the uterus (8), seems sufficient to justify the conclusion that such pain may be due to increased sympathetic irritability or a condition of sympatheticotonia.

Another visceral reflex which aids in diagnosis is hyperaesthesia. The production of this is clearly explained by the fact

that abnormal excitations from a diseased internal organ reach the cord by way of the afferent nerves; the excitability of the whole spinal segment becomes so exaggerated that cutaneous excitation which normally would only produce a sensation of contact now becomes one of pain. To appreciate the clinical importance of this phenomena, it is necessary to understand the distribution of cutaneous sensibility. About the neck and trunk this is ring shaped, but remembering the limbs are the outgrowth from buds whose axes are at right angles to the body, the arrangement has become obscured. Observation reveals that the higher segments are distributed along the primitive upper side of the limb and the lower along the post axial portion.

The presence of hyperaesthesia is not as constant as pain, but when present aids in differentiating confusing pictures. It is brought out by lightly drawing a pin over the surface of the skin, and at a certain point the contact becomes painful. The area is thus mapped out and knowledge of what viscera is innervated by the same spinal segment enables us to locate the source of the internal pain.

Instances of this reflex are seen in a hyperaesthetic zone supplied by the left tenth thoracic segment in gastric ulcer, in duodenal ulcer in the right tenth thoracic, in gall-bladder pathology and the ninth right thoracic, in appendix involvement and the right twelfth thoracic. Such zones may not correspond with local tenderness. The finding of zones of hyperaesthesia is, however, not always followed by the discovery of the diseased viscus so easily. Examples are noted about the region of the shoulder girdle, chest and neck, that area supplied by the third and fourth cervical nerves. The sensitiveness here is not pathognomonic of one particular disturbance, for it may be present in inflammatory conditions of portions of pleura about the apices, in pathological changes in the lung itself, and as a result of inflammation of the costal portion of the diaphragm. Again on the right side hyperaesthesia may be noted in involve-

ment of the liver (9) where the capsule is involved, for this is supplied by the phrenic nerve and the reflex takes place between the phrenic and the third and fourth cervicals.

Hyperaesthesia of the left arm and left anterior chest following anginal attacks was noted by John Hunter.

One other visceral reflex is noted in muscle hyperspasticity and muscle degeneration, called by Pottenger visceromotor and viscerotrophic. The former is most frequently noted in acute abdominal conditions and in injuries to the bony skeleton, where spasticity is developed as a protective means. The same condition, but more difficult to recognize, is apparent about the shoulder group of muscles in inflammatory conditions of pleura and lungs. Here the same spinal segments are involved—namely, the third and fourth cervicals and the transmission of impulses is the same.

The viscerotrophic reflex is given a place of much importance by Pottenger in diagnosis of pulmonary diseases. The exact cause of degeneration of subcutaneous tissue and muscle is perhaps unknown. Head's assumption that the impulses are carried to the cerebro-spinal nerve because of their higher sensibility is plausible and the constant bombardment of these neurons which at first causes a spasticity later results in degenerative changes and atrophy. Study of these muscles show true atrophic changes (10), and though no literature was available to the writer on the nature of changes in the course of the nerve paths, it seems likely that the changes are the result of nerve lesions primarily. Anatomical or pathological changes may not be demonstrable, and functional cannot be. The theory of toxic action seems the most plausible one as to the origin of the impulse, which furnishes the stimulus in this reflex. This in due time exerts, through its catabolic nature, destructive or at least harmful changes somewhere along the nerve path. In regard to fatigue of nerve tissue, we know its production is difficult and the point of least resistance is at the myo-neu-

ral junction (11), and here we have the accumulation of the acid ions causing decreased susceptibility to normal stimuli.

Pottenger (12) brings to our attention the possible role of the lack of certain bases which is known to accompany the chronic tubercular and advances the idea that the point of decreased sensitiveness to stimulation is at the synapse.

The causes are theoretical and detract in no way from the practical value of the sign, only remembering that spasticity precedes the atrophy. Chronicity is a necessity for the latter condition, acuteness for the former.

The number of reflexes mentioned above have been few in comparison to the number known, and although our knowledge of

visceral or of vegetative neurology is not yet stabilized, as Radolsky remarks: "The sensory phenomena and reflexes from the vegetative nervous system form a periscope through which we can inspect conditions in the internal organs."

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PNEUMOTHORAX, ROENTGENOGRAPHICALLY CONSIDERED*

FRANKLIN B. BOGART, M.D., Chattanooga

THE occurrence of spontaneous pneumothorax has long been recognized and its favorable effect noted on the course of pulmonary tuberculosis. It was not until the roentgenographic examination of the chest became widely used, however, that the frequency of spontaneous pneumothorax, particularly partial pneumothorax, was recognized. Since the introduction of artificial pneumothorax as a therapeutic measure in the treatment of pulmonary tuberculosis the roentgenographic examination has increased in importance.

It is the purpose of this paper to briefly review some of the well-known facts regarding the roentgenography of pneumothorax and to present the roentgenographic findings in three cases of pneumothorax.

Pneumothorax is characterized by the presence of air in the pleural cavity. The extent of the pneumothorax and its shape are determined by the condition of the lung, by pleural adhesions, and by the amount of air that is allowed to enter the pleural cavity. If the lung contains areas of consolidation, such areas will influence the extent to which the lung will collapse. Pleural adhesions will likewise limit the pneumothorax, and it is obvious that the amount of air introduced, either artificially or through a ruptured lung, will be a determining factor in the size of the pneumothorax produced.

Pneumothorax may be variously classified, as partial or complete, as uncomplicated, hydropneumothorax, pyopneumothorax, hemopneumothorax. Other descriptive terms may be used and are at times necessary in describing a pneumothorax. The

best basic classification that has come to my attention, however, is that of Bendure. (1). He divides the cases into:

1. Expansile pneumothorax; those cases in which there is a negative pressure of minus two to minus ten in the pleural cavity with consequent incomplete collapse of the lung and partial expansion of the lung with each inspiration.

2. Pneumothorax of rest or static pneumothorax; those cases in which the pressure in the pleural cavity is equal to atmospheric pressure:

3. Compression pneumothorax; where the intrapleural pressure exceeds atmospheric pressure.

Pneumothorax may occur spontaneously or may be produced artificially. Ninety per cent of the cases of spontaneous pneumothorax occurs in active pulmonary tuberculosis. (2) Many of the so-called idiopathic cases occur in asthmatics where chronic hypertrophic pulmonary emphysema exists (2) (3) or in cases where an old pleural adhesion is broken. (4) Many of these of spontaneous pneumothorax occur as the immediate result of straining, as the lifting of a heavy weight.

Roentgenographic examination for possible pneumothorax is indicated in any obscure chest condition, particularly where there is dyspnea, history of pain coming on at the time of a strain, or obscure physical findings in the chest, for partial pneumothorax is often overlooked until revealed by a roentgenogram. When a pneumothorax exists, the following points should be noted (5):

1. The extent of the pneumothorax. It is usually unilateral, but may rarely be bilateral (2) (6).

*Read before the Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

2. The location of adhesions, most common at the apices.

3. Air between the lobes.

4. Air on the mediastinal side of the lung.

5. Areas of infiltration in the lung preventing complete collapse.

6. Widening of the intercostal spaces.

7. Depression of the diaphragm.

8. Displacement of the heart and the mediastinal contents. This occurs more commonly in pneumothorax than it does with pleural effusion. The displacement is away from the affected side, due to loss of tension of the collapsed lung and the upsetting of the balance between the two sides.

9. During inspiration the mediastinum may be displaced to the affected side and the diaphragm elevated.

10. Engorgement of the lung on the affected side, which is not to be confused with a disease process.

11. The presence of fluid. Fluid is usually present at some time during the course of pneumothorax. The horizontal level of fluid in the pleural cavity is an unmistakable sign of the presence of air. Often the density of the shadow cast by a fluid will give a very good idea regarding the character of the fluid.

12. Subcutaneous emphysema.

Artificial pneumothorax may be induced by the introduction of air into the pleural cavity, for therapeutic or diagnostic purposes. When therapeutic pneumothorax is considered in pulmonary tuberculosis, the roentgenographic examination of the chest will determine:

1. The extent of the tuberculous lesion, whether one or both sides are affected; hence, in most cases, whether or not artificial pneumothorax shall be used.

2. The location of the lesion will guide the operator in choosing the site of the puncture.

3. When the lung is completely collapsed.

4. The location of large adhesions which might contraindicate further attempts at producing pneumothorax.

5. To an extent the time of the reinjection of air.

Isaacs (7) advocates the use of artificial pneumothorax in obscure chest conditions for diagnostic purposes; as the differentiation between lung abscess and interlobar empyema, and in the exact location of a lesion in the lung, pleura, rib, mediastinum, or chest wall. I have not seen this procedure used, but it would doubtless be justified in selected cases.

It does not come within the scope of this paper to discuss the question of whether or not annular ring shadows found on roentgenograms of the lungs are cast by cavities or areas of localized pneumothorax. Those who are interested in following the controversy which has taken place over this point are referred to the articles of Sampson, Heise and Brown (8) and Honeij (9) (10), who contend that they are cast by localized pneumothoraces; and to the articles of Burnham and Brown (11) and Brown (12) (13), who contend that they are cast by cavities. It is my personal opinion that these shadows usually, if not always, represent cavities, although I have not had the privilege of following many of my cases to the autopsy table.

Any good chest technique with which the roentgenologist is familiar will demonstrate pneumothoraces. My personal preference is a high spark gap, eight to nine inches, forty milliamperes, 36-inch distance, no screens, and an exposure time of from three-tenths of a second to one second.

CASE REPORTS

W. D. K., patient of Dr. G. P. Haymore, white, male, age 63 years, admitted to Erlanger Hospital as an emergency December 9, 1924, suffering from marked dyspnea, cyanosis, and pain in the left side of the chest. A short time before admission the rear wheel of a heavy automobile had passed over his chest.

Roentgenographic examination at this time revealed fractures of the first, second, third, fourth and fifth ribs on the left side and the first rib on the right side, and pneumothorax on the left side with complete collapse of the lung. The air occupied the space between the lung and the mediastinal structures as well as the space between the lung and the chest wall, and there was marked subcutaneous emphysema. The heart and the mediastinal structures were not displaced, and

there were no shadows suggestive of hemorrhage into the pneumothorax.

The patient remained in the hospital and made a slow but uneventful recovery. Roentgenographic examination on January 5, 1925, showed considerable callus formation at the site of the fractured ribs. There was still a partial pneumothorax on the left side occupying an area about one and one-half inches wide along the axillary margin from the level of the diaphragm to the fourth interspace. There was considerable infiltration at both hilum and a mild density at the left base, which was probably caused by a collection of fluid.

No roentgenograms were made later, but the patient is clinically well.

T. E. S., case of Dr. W. D. Anderson, age five years, white, male. Past history and family history essentially negative. About December 20, 1924, patient contracted whooping cough. The last of December he got wet and was chilled during a fire, from which he had a cold and later broncho-pneumonia. By January 15, 1925, the broncho-pneumonia was clearing up and a roentgenographic examination on January 16, 1925, showed the size and shape of the heart within the normal limits, and considerable peribronchial thickening throughout both lungs, more marked in the upper lobes and more marked in the left upper than in the right upper.

On January 17, 1925, the patient developed a septic temperature, and on January 19, 1925, a needle was introduced in search of pus with negative results. Roentgenographic examination on January 21, 1925, revealed less peribronchial thickening at the left upper than the previous examination. There was collapse of the entire right lung with slight displacement of the heart and mediastinal contents to the left and with definite depression of the diaphragm on the right side. There was a small accumulation of fluid at the right base.

The patient died January 23, 1925.

C. G., negro boy, age 16 years; occupation, laborer. Admitted to Erlanger Hospital on the service of Dr. J. L. Bibb on August 23, 1924. One week previous to admission the patient became weak, had a headache, and was forced to stop work. At the time of admission to the hospital there were pains in the right chest which were worse on deep inspiration, pains in the abdomen, loss of appetite and apparent loss of weight.

Laboratory findings: Blood count; leukocytes 20,000 with 85 per cent polynuclears, 133 per cent lymphocytes, and 2 per cent transitionals; Widal negative with B. Typhosus, B. Paratyphosus Alpha, and B. Paratyphosus Beta; malarial smears negative; Wassermann titration negative.

The tentative diagnosis at this time was lobar pneumonia, and the true condition was not recognized until the roentgenographic examination September 9, 1925. This examination disclosed a partial pneumothorax on the right side extending from the third to the seventh interspace, posteriorly, and from the axillary line toward the hilum of the lung for a distance of two and one-half inches. There were adhesions at the level of the second and seventh interspaces. The uncollapsed portion of the lower lobe was markedly increased in density, except for an area 3 cm. by 2 cm. at the level of the sixth interspace, posteriorly. And the upper lobe was increased in density except for an area 1 cm. by 1½ cm. in the first interspace. The diaphragm was depressed on the right, and the angle of the dia-

phragm was obscured by a small accumulation of fluid. The heart shadow was displaced to the left two inches, and there were definite densities on the vertebral and the first and second interspace trunks.

The patient died September 17, 1925, and was autopsied by Dr. Patterson. The findings in the chest were as follows:

"Heart displaced three inches to the left, pericardial sac not removed. Right lung densely adherent along the anterior border and over the entire upper lobe. The entire upper lobe was solid. As the adhesions were broken, a pneumothorax about four by three by two inches was broken into, the air being under pressure. A cavity ruptured into this, filling it with reddish yellow fluid. The right lung was removed. On section the entire upper lobe was solid, as if infiltrated, except for a cavity three-fourths of an inch in diameter at the apex which was filled with necrotic yellow material. In the lower lobe there was a cavity about the same size and near it a collapsed cavity which was apparently the one which was responsible for the pneumothorax. The lowest portion of the lower lobe was soft and apparently functioning. The middle lobe and the upper portion of the lower lobe were compressed and infiltrated. Diagnosis: Chronic ulcerative pulmonary tuberculosis with acute tuberculous pneumonia and pneumothorax."

This diagnosis was verified by microscopical studies of the lung tissue.

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J. F. GALLAGHER, M.D. ----- Editor
 R. C. DERIVAUX, M.D. ----- Associate Editor

MAY, 1925

WANTED: A MEDICAL MOSES

There was a visitor in this office not long since who has given as much time, service and thought to medical organization as any other member of the medical profession of the state has given. He consistently attends medical societies and as secretary of his own county society has made it for years one of the best component organizations of the State Society. He was sincerely concerned over the possible continued life of his society, fearing that the lack of physicians in the rural communities would sound the death knell of the county medical society. And right there the much debated topic of whether there is an actual or apparent decrease in the number of physicians in rural communities arose. Regardless of what statistics would attempt to demonstrate, there is a real decrease. And this decrease will surely have its influence on medical organization. The question of grouping counties was discussed, in as much as this plan has been successful in several sections of the state, but it was seen that this plan is only feasible where geographical and other conditions are favorable. In a discussion of the regional or sectional societies, it was pointed out that these meetings are being exploited by the specialists of the larger medical centers, and hence are deprived of performing their former useful purposes. In the meantime the total membership of the State Society is decreasing—slowly but surely. The number of physicians of the state is decreasing; the number of component county societies reporting as organized is decreasing because there are so

few eligible to membership that no meetings are held. Why shouldn't the membership decrease? This is no apology but an attempted analysis of a condition that is confronting all who have the interests of organized medicine at heart. Where is the medical Moses who will solve this problem and lead the children of medicine out of the wilderness?

DEATHS

Dr. Henry J. Kelso, aged 54, well-known physician of Knoxville, died suddenly May 7th, at his home. Dr. Kelso was a graduate of Vanderbilt University Medical Department in the class of 1892.

Dr. Newton F. Raines, pioneer physician of Raines, Tenn., died suddenly May 7th. Dr. Raines was born in the year 1858 and was a graduate of the College of Physicians and Surgeons, Baltimore, Maryland, in the class of 1879.

Dr. J. T. Lasley died at his home in Union City May 8th, aged 80.

NEWS NOTES AND COMMENT

Dr. S. F. Hinson has moved from Linden to Newbern.

Dr. B. V. Howard, of Knoxville, has been appointed by the government as a member of the State Board of Nurses' Examiners.

Dr. W. H. Taylor, of New Market, was elected President at the annual meeting of the Southern Railway Surgeons which was held in Savannah, Georgia, May 14th.

Dr. Duncan Eve., Sr., Dr. L. E. Burch, Dr. Duncan Eve., Jr., and Dr. John C. Burch have recently effected a partnership for the practice of surgery and have purchased a residence on West End Avenue opposite the Vanderbilt campus to be remodeled and used as offices.

MEDICAL SOCIETIES

Dr. E. S. Hopper, of Alamo, was re-elected President, and Dr. R. Graham Fish, of Alamo, reelected Secretary-Treasurer at a recent meeting of the Crockett County Medical Society.

Officers of the Rhea County Medical Society are as follows: Dr. Albert Broyles, Dayton, President; Dr. J. L. Jones, Dayton, Secretary.

MISCELLANEOUS

FULL TIME: THE LETTER OR THE SPIRIT?

The principle of full time as Frederick T. van Beuren, Jr., New York (Journal A. M. A., May 2, 1925), understands it, is very simple. It demands from every incumbent the thorough, efficient and earnest performance of the duties of his office, whether research, teaching, care of the sick or mere administration. It lays this down as a condition, *sine qua non*. It does not specify how the condition is to be effected. That is merely a matter of method where choice is still permissible. This principle, I think, is now pretty generally accepted. The method of its application, however, in all its details has not yet been—may never be—completely agreed on. It is always possible to differentiate the spirit from the letter of any plan of organization and to discriminate between them. It appears that there still exists some difference of opinion regarding the relative value of the letter and the spirit in the administration of a plan. The spirit of it must first be discovered or created and then fostered, a process painfully suggestive of evolution. The letter of it, on the other hand, can at once be enforced by suitable restrictions and regulations with the delightful rapidity of mere legislation. On the face of it, the latter is easier to accomplish: A man walks into the hospital or school at 9 a.m., or at 8, and signs his name in the time book. At 4 or 5 p.m., he signs again and walks out. He has "confined his work to the school and the hospital." He is therefore "a full-time man." He has complied with the letter of the law. Just what and how much he has done during the eight-hour shift is between him and God. After a certain period he is called on to exhibit some evidence of his industry. This generally takes the form of a publication that is expected to show originality. In that case it would appear that the full-time man ought to be intelligent as well as honest, and ought to have some originality of thought. If,

during his labors, he has been so fortunate as to hit on some discovery or to formulate some method whose practical application promises or proves to be of value to the community or to the world, he may be crowned with fame. A purse may even be added to the crown. But if he has not been so fortunate, he is expected to work just as hard and to be content with the reward of virtue. Therefore the full-time man ought to be conscientious to a high degree; for it is justifiable to say that most of us work for a reward of some sort rather than for the mere joy of working. The problem of university full time has theoretically a very simple solution: find the right man; put him in the right place; give him all the freedom of thought and action that is possible under the university statutes. To translate that theory into practice is not always so simple. At Columbia University the former full-time plan, with its specific restrictions for men in the clinical departments, was in theory intended to offer freedom and afford opportunity. But it grew into something very much like involuntary self-denial as we practiced it. Now the details of the plan have been altered without in any sense altering the principle of full time it is intended to apply. There is a statute 65 of Columbia University for the government of all officers of instruction in every department of the university, clinical or otherwise. "No officer of instruction," it reads, "shall be employed in any occupation which interferes with the thorough, efficient and earnest performance of the duties of his office." This is the only prohibition now subscribed to. All departments are now on this same university basis.

THE ROMANCE OF MEDICINE

William D. Haggard, Nashville, Tenn. (Journal A. M. A., May 30, 1925), reviews the progress made in medicine in the last fifty years. He says that medicine is the only profession that is literally and altruistically devoted to professional suicide. It endeavors chiefly, not alone to cure, but to prevent disease, and thus to banish from mankind—pain, suffering and ultimate death from maladies of the flesh. But what it cannot prevent it must cure. What it cannot cure it must palliate. The discovery of the germ of tuberculosis, "the Captain of the men of Death," was the beginning of the annihilation of the Great White Plague and is a more important victory for mankind than resulted from the Fifteen Decisive Battles of the World. That the spirochete was the actual cause of syphilis, the great Black Plague, was discovered by Schaudinn in 1905. A romance in medicine to grip the admiration of the world is the subjugation of typhoid fever. Most dramatic among modern victories is the conquest of yellow fever. In the last decade, many diseases of the heart, kidneys, gall-bladder and other organs have been shown to be derived frequently from the foci

of infection around the teeth, in the tonsils, in the sinuses of the nose, and in other structures. This great discovery has enabled the physician to administer in many cases the most effective of all treatments, the removal of the cause. The discovery of radium by Madam Curie close on the discovery of the roentgen ray by Roentgen in 1896 was not only a triumph in wresting another secret from the physical world, but has furnished a most necromantic weapon for the cure of certain forms of cancer and for its palliation in hopeless neglected cases. The use of safe drugs for local injection in rendering surgical operations painless is now like a performance in a world of magic. Antitetanic serum to prevent lockjaw is the king of preventive serums. Physicians and the whole world are daily debtors to the innumerable instruments of precision, to the blood pressure apparatus, the basal metabolism rate machines, and the newer instruments for administering gases, that render anesthesia almost totally devoid of danger. What is more astounding than the revelation in the last few decades of the part played in our bodies and lives by the wonder-working ductless glands? The greatest romance of the last few years in medicine was the discovery of insulin, by Banting. The solution of the pellagra problem seems nearer with the increasing belief that pellagra is a deficiency disease, possibly from a shortage of vitamins, and seems to be caused by faulty protein food mixture and is generally benefited by fresh meat and milk. The most threatening cloud of chronic disease in the South, hookworm, has been dissolved by the wand of Aesculapius. The real romance of present-day medicine is to prevent or to discover early the degenerative conditions of the great organs, the heart, kidneys, liver and brain. All the saving in life has been in the prevention of infant mortality in the control of contagious diseases. Eternal vigilance of every individual by his physician is the price of lengthened life in the middle aged. Community health is much in advance of the prevention of illness in the individual. Have a thorough physical examination on your birthday! It should be a real survey of a man's physical as well as mental status. It is estimated that the number of cases of sickness in this country in a year is thirteen and a half million, costing the nation a billion dollars. It is astounding to think that there are two hundred and twenty-five million days of sickness a year in the United States. If it were possible, by nation-wide effort, to reduce the amount of sickness by twenty-five per cent, the total economic gain yearly would be around a quarter of a billion dollars. The people should be taught that in truth there can no more be dif-

ferent "schools" of medicine than there can be different schools of physics, or of mathematics or astronomy. There is nothing under the sun which is of proved value that has not and will not be used by the profession in the treatment of disease. All non-medical agencies are enthusiastic endorsers of health examinations. A health week should be established nationally by all the health agencies of this country, with the co-operation of every one of the ninety thousand members of the American Medical Association. The press can be counted on to do its part, which is an essential as it is unfalteringly interested and helpful in all health movements. A manual for the examination is being prepared by the American Medical Association. Examination blanks can be obtained from the headquarters making for completeness and uniformity. The stupendous advance in medical education in the last fifteen years reads like a romance. The supply of an adequate number of sane, resourceful, dependable physicians should have the solicitude of the profession as a whole, as well as of the medical educators. The laboratory side also should not be overcultivated. Fundamentals should be stressed, but recondite experimental work omitted in the undergraduate course. In this desirable correlation between the pure sciences and the clinical subjects, the student of anatomy and pathology should be brought in his first two years into contact with the patient, so that he will appreciate the relationship of his studies to the problems of disease. Regarding clinical work in England, the Council on Medical Curriculum has advocated the continuation in the clinic itself of anatomy, physiology, pathology and chemistry, as these apply to the problems of medicine and surgery there presented. The question of entering the student into practice at an earlier age is important. It is impossible to devote to preliminary preparation less than two years of college work in biology, physics and chemistry, and it is impossible to eliminate anything from the four-year medical course. The hospital year is essential. The only chance to curtail the length of time would be by saving one or two years in the high school. This can be done by the four-quarter school year and no compulsory vacation at an unchangeable time, thus saving one or two years for the student with medicine as his goal. One of the greatest romances in the art of medicine has been the amazing growth and perfection of the specialties. One of the drawbacks of specialization is that it loses for the physician the personal touch and close contact with the family and with the acutely ill. The general practitioner must retake his former position of importance.

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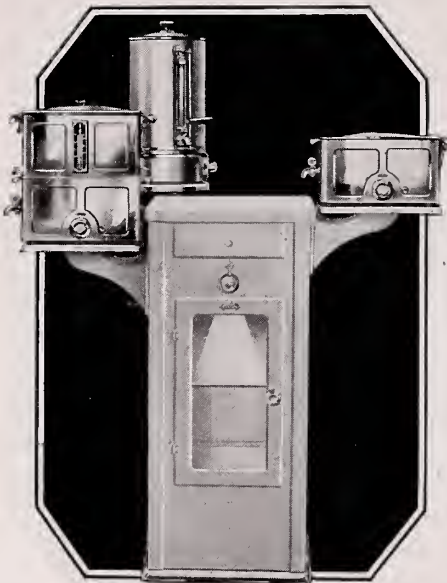
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THE AMERICAN MEDICAL ASSOCIATION AND PERIODIC HEALTH EXAMINATION*

WILLIAM D. HAGGARD, M.D., Nashville

MR. CHAIRMAN, Fellow Members of the Association, Ladies and Gentlemen: It is a very great privilege to be permitted to speak to you tonight, particularly on the subject of the American Medical Association, which we hold so dear, and which means so much, not only to our profession but to the nation.

I have been greatly interested in the development of the Association, and particularly with its present great position throughout the country. It has been very gratifying to recognize the enormous influence for good which it wields, not only for its membership but in the multiplicity of its publications. Each of you number one of its 90,000 members. You recognize the fealty you give to our mother association, and you recognize the unparalleled position of the Journal as the outstanding medical periodical of the world. You may know that nearly 5,000,000 copies of this Journal are printed every year and that the entire and complete Journal as we get it is also published in Spanish and distributed to South American republics and other Spanish-speaking peoples. Six special journals are published monthly—the Archives of Surgery, the American Journal of Chil-

dren's Diseases, and the newer publications, the Archives of Dermatology and Syphilis and the Archives of Otolaryngology. I think you should be greatly interested in the lay publication known as "Hygeia," which is doing so much for the dissemination of real medical knowledge throughout the country. The American Medical Association is at great expense every year to give to the reading public generally, and to the profession particularly, this special knowledge about health. I can recommend this journal, Hygeia, to you not only for your own reading, which I think will be done with pleasure and profit, but for distribution among your clientele.

The American Medical Association is a corporation with assets of over a million dollars. Several hundred people are employed there. Tennessee has been greatly honored in the last few months in the choice of its General Manager, a man who has been greatly beloved and honored in this State and in this Association, a man whom we all admire—Olin West. (Applause.)

Inasmuch as we are all fellow members of the parent Association, we all look forward to its annual sessions. I trust that the next session will not be among those that have not been best attended and have not attained the best of scientific level.

I wish to call your attention to another

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activity of the American Medical Association which will perhaps have more effect upon us and upon the profession and the country at large than any other movement, and that is the periodic health examinations. You know we are living in the Golden Age of medicine. We have seen the great scourges and pestilences wiped out, we have witnessed the era of the discovery of the cause of most of the infectious diseases. This last year alone has been the greatest in the history of medicine, for it has shown the lowest mortality rate ever attained—the year nineteen twenty-four was the healthiest year the world has ever known. This is partly due to the subjugation of the pestilences referred to. We no longer have plague, we no longer have yellow fever, we no longer have many thousands of people dying every year, as they did in this state and sister states in 1878, of that dread disease. So we have witnessed the conquering of that dread thing that made us all cowards—typhoid fever. In the last year the mortality rate has dropped seventy-two per cent in that disease alone, and we no longer fear this scourge. Tuberculosis has been so greatly decreased that the mortality rate has dropped off more than fifty per cent. We have added something like fifteen years to the span of life in the last few decades, so that now the average span of life is from fifty-four to fifty-five years of age.

This increase in longevity has been attained in the younger years, in the better care of the infants, in wiping out the so-called "summer diseases" that beset them, by taking care of the young children, in conquering diphtheria—and now we are on the way to the control of scarlet fever by the Dicks immunity test.

But we have not done enough for the middle aged man and woman. There the mortality rate is just as high. The degenerative diseases are the things to which we must now address ourselves. We have conquered most of the contagious diseases, we know that the other diseases of childhood have been greatly curtailed, but what of the man in middle life? What of heart

diseases? What of the nephritides, and their circulatory complications? There we still find the highest type of mortality. These things still destroy more lives than other forms of disease. Now we are on the threshold of a new era. The evacuation of the focal infections, we believe, will greatly modify this whole chain of diseases, but it remains for us to apply our knowledge effectively and systematically.

The American Medical Association has taken its stand with our health agencies for the method whereby the man of middle life may be thoroughly examined, may be overhauled, his infirmities anticipated, his incipient diseases recognized and anticipated; to the end that he may not only live out the attained average of fifty-five years of life, but he may live to sixty or sixty-five. In New Zealand, which is the healthiest country of all, the average age is sixty-five; so there is no reason why we may not live to sixty-five in this country.

Every business in the world has an inventory made annually or bi-annually—a stock taking. Do we ever think about doing that for ourselves? Do we ever think about it for our patients who are apparently in perfect health? We are so concerned with the acute diseases and the injuries of life, and the great problems of public health and stress of acute diseases, that we have neglected this. We must realize that a great opportunity is lost not to early recognize many of the degenerative diseases. You are all familiar with the man who says he is "brutally healthy" that he "never needs a doctor." He comes up for life insurance, perhaps, is examined and is appalled to find that he has some kidney, heart, lung or other disease that prevents his taking out life insurance. Of the applicants for life insurance fifteen per cent are turned down—the man with albumen, the man with diabetes, the man with the cardiovascular lesion. Those are the diseases to which we must now direct our attention.

Periodic health examination has been taken up by the so-called "life extension bureaus" and the great life insurance

companies. They have done the wise thing, and many of them give their policy holders a free examination every year in order that they may live longer—and pay more premiums. It is good business and fine for a man, for the insurance companies say that in the last five years they have increased the span of life twenty-eight per cent. They find it a paying proposition, for they not only get more premiums but make 200 per cent on the cost of the examination of these men.

What about the practitioner of medicine? It is his patient who should have the examination. Not only should he have the examination, but he should have the advice of the man who is best prepared to give the advice, to correct the deficiencies, major or minor as they may be, and to prepare the man for the diseases and changes that are inherent at his time of life. If this were done it is obvious that the gain to the people of this country would be almost beyond computation. We know that the sickness in this country every year costs a billion dollars. The people who have practiced periodic health examinations say that if we will carry these out it will save twenty-five per cent of these illnesses—which means a saving of a quarter of a billion dollars annually.

So the slogan is, "Have a thorough physical examination on your birthday." Some of us, perhaps, do not have as many birthdays as we used to, but this is not the only anniversary that we may celebrate. Nowadays, when the divorce coupon comes with the marriage certificate, one can have the health examination on one's marriage anniversary, which will make them come oftener.

Now, what will be the advantages to the profession? You are familiar with the advantages to the patient and to the public. Well, unless the organized profession of medicine takes hold of this, it will be carried on by other organizations or individuals. We believe that to the medical man belong medical matters. We believe we must have a drive of education

throughout the country for these periodic health examinations, and that the people must be taught to go to their physicians on their birthday for such examinations, and for advice as to the best way to conserve life, health and efficiency. This is our problem—we have had drives for everything else and we have all responded. The medical profession has been the most generous and the most unselfish profession in the world. This plan will be the greatest thing imaginable for the medical profession. We are fine when it comes to the recognition of pathological conditions in the sick, but bad or not so good when it comes to the recognition and prevention of disease in the apparently well. That is the problem of today—the prevention of the degenerative organic diseases that beset us and their eradication, if we are not early enough to prevent them in their incipency.

If tomorrow morning every individual was to come to their physician and ask for a thoroughgoing physical examination—not all at once, but on their birthdays beginning tomorrow, they would not get it. Our profession is not prepared for it. We are not sufficiently sympathetic—we have not time. Nowadays, if a man comes to us and asks to be thoroughly examined, we give him very short shrift. We all know that the nervous individual who insists on a thorough examination very often does not get it—we are very clairvoyant—we can tell whether there is anything the matter or not, and we do not give them very much time. We decry the inadequacy and humbuggery of the cults, but they, at least, talk the language of the patient, but we do not. We talk a language they do not understand; sometimes we do not understand it ourselves.

Learn to make a complete, intelligent, thoroughgoing physical examination. What did Dr. Frank Billings, the dean of American medicine, say? He said that our greatest fault is that we do not thoroughly examine the patient. We have a pleasant conversation with him, perhaps,

and in a necromantic way we find out, perhaps, what is the matter with him from the symptoms, but we do not examine him from head to foot religiously as a routine. If we recognize and take advantage of this opportunity that will be a vast advance in the practice of medicine and in the dissemination of knowledge for the good of humanity. We must have a drive for the health of our individual patients. Not for the public health generally, for that is taken care of by the Public Health Service of the United States. Who gives thought and care to our body, the temple of our immortal soul? How many of us have been examined recently. During the war most of us were because we had to be, but since then how many doctors have had a physical examination in health or a very thorough one even in sickness?

Some of the state medical societies have taken this up in a very splendid way, notably Pennsylvania and Maine. I was the guest of the Brooklyn Medical Society last October. They have taken it up seriously and most effectively. They first had every doctor examined—on the principle that if they believe, let them show the faith that is in them by having it done upon the doctors themselves. The Nashville Academy of Medicine last week had a distinguished physician, Dr. McLester, of Birmingham, discuss this entire problem and technique of examination and how to evaluate certain deviations from the normal with us. If the health seeker becomes a patient is there anything the medical profession can do for him better than to convert him back from a patient to a well man? It is appalling to think of the many minor things that affect us that have great potentialities for evil.

Let us have a drive in every community and finally a national health week to conserve the health of the individual. We have had drives for everything else. The time has come to do this larger thing for the community and for humanity. In a wholesale way we can inoculate a hundred thousand men against the scourge of typhoid fever and have only a very few

cases result, but with the individual's personal activities we are not so successful. It must become an individual matter. One of the most important things in the chronic case after every other question, and after you have made a complete physical examination, ask the patient "Are you happy?" You will be amazed at what you will frequently uncover. Many times he is not happy in his family life, in his business life, or in his relation to life in general. You can be of infinite assistance to your patients. Who is better able to wipe out the written troubles of the soul than the physician and friend who has known him in sickness and health—in sickness more than in health. The great future of preventive medicine lies in getting in closer touch with the apparently well man, or the man who thinks he is well.

So if we ourselves will have these examinations then we can have health weeks and have members of the profession present this proposition to the churches, to the clubs, to the women's federations, and so on, until everyone will be imbued with the element of service which the physicians wish to render to every member of the community in which he lives.

I wish to commend to you most heartily, to the Tennessee State Medical Association in its ninety-second annual session, the vast importance of this matter; to the end that it may be carried back by you to each county, town and district society in the State of Tennessee. This movement did not originate in the profession, but it belongs to the profession. Shall we accept our responsibility or shall we leave it to the insurance companies and to the life extension bureaus? No agency can have the human touch that the patients' own physician can give it or the sympathy and interest in the problem that he will bring. I commend to you the necessity and the value of the periodic health examinations to every man, woman and child in this State. Will you do it?

THE TREATMENT OF ACUTE SUPPURATIVE APPENDICITIS*

A STUDY OF 222 CASES

CHARLES BROWER, M.D., and J. D. LESTER, M.D., Nashville

OWING to the fact that so much has been written on this subject, we would feel a hesitancy in bringing it before your attention were it not a fact that the (1) general mortality ranges between seven and one-half and sixteen per cent, a condition which should not exist and one which we are unable to explain, unless it is due to the moribund condition of many of these patients on admission to the hospital, the occasional operator, the lack of surgical judgment on the part of many, or the experienced surgeon who persists in doing kitchen surgery when it is not necessary, leaving these patients with a drain in the abdomen to be cared for by the general practitioner. It is for these reasons that we felt that it would not be amiss to refresh your minds with the subject.

In dealing with the treatment of this series we have divided them into two classes. First, the acutely inflamed or gangrenous appendix with no pus outside of the appendix; second, those acute cases with localized abscesses, or with free pus and general peritonitis. Under the first class there were 156 cases or 70.27 per cent. Under the second class there were 66 cases, or 27.72 per cent.

We shall deal with these cases only from a surgical standpoint, because they were all treated surgically. We do not advocate any different form of treatment for the acute and suppurating appendix.

OPERATIVE TREATMENT.

Incision. The incision preferred by many, when there is no infection beyond the appendix proper, is that recommended by McBurney. We feel that this incision is not suitable for the treatment of the

acute and suppurating appendix, as it does not lend itself to enlargement, nor permit exploration of the upper abdomen so often indicated. Its routine use leads to otherwise avoidable technical difficulties which would have been observed through a right rectus. The means of approach in all of the above cases was through a right rectus incision, known as the Deaver incision, to which we give preference, because it offers free access to the cecum and appendix which may be anywhere from the liver to the pelvis, or to the left of the median line. It can easily be extended in either direction when necessary for more room, which is not infrequently the case, giving complete command of the peritoneal cavity, with a minimum risk of being followed by a ventral hernia. It affords easy access for drainage in those cases where drainage is indicated. It does away with the necessity for the use of retractors, which is one of the chief causes of wound infection and failure of primary union.

In entering the abdominal cavity we try to enter the free cavity lateral to the appendix and inflammatory mass. If we are successful in so doing, the intestines are coffer-dammed off with a narrow pack two inches in width. The inflammatory mass is approached, being careful to sponge away all pus as it presents itself in the field of operation. After we are satisfied that the field is clear of pus, the appendix is located and removed by the usual purse string method, being careful not to make undue traction on the cecum and doing a minimum amount of trauma to the intestines.

If we are not fortunate in entering the abdominal cavity lateral to the inflammatory mass, or where the infection is not walled off and patient has a local or general

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peritonitis, we proceed as above. After satisfying ourselves as to the cleanliness of the field, the intestines are walled off with a narrow pack, being careful not to put in any more of the pack than is necessary. The appendix is then removed by the most applicable method.

In those cases where there is free pus in the peritoneal cavity, we always sponge out the pelvis, as it is usually filled with a purulent material, which if removed will greatly relieve the toxemia of the patient, and facilitate the early removal of drainage tubes.

Before passing to the subject of drainage we wish to caution against the handling of the intestines and traumatizing them with large packs in an effort to wall off the infected area; also their exposure to the air, as these are the most potent causes of shock after abdominal operations, and subject the patient to a stormy recovery.

Drainage. The question of drainage must be decided by the condition present. When the appendix is of the acute catarrhal type and the effusion is sweet, no drainage is required. The same is true of the acute gangrenous type, if no gross perforation with widespread infection has occurred. This not infrequently is the case, thus necessitating drainage. None of the above cases under the first classification were drained. Under the second classification sixty-one of the sixty-six cases were drained, or, 92.42 per cent. If the infection is localized and the pus walled off, we insert a drain into this cavity. If the infection is more general and not walled off, we insert the drain in the pelvis, being careful not to insert it between the coils of the small intestines, but to carry it down by the head of the cecum and over the brim of the pelvis to the desired location. We seldom insert more than one drain; occasionally the right lumbar region is drained if there has been an abscess in that region and necrosis of tissue.

The character of the drain is a soft rubber tube three-eighths of an inch in diameter with plenty of life in the rubber, split in a spiral manner with a wick of gauze

inserted in the lumen of such a size as not to block the channel.

It is not a part of wisdom to insert drains promiscuously through stab wounds in various regions of the lower abdomen. In fact, it is a very bad practice, the purpose for which it was intended being defeated. Furthermore, it is conducive of intestinal obstruction, necrosis of small intestines and formation of fecal fistulae. This was very vividly impressed upon us about four years ago when a patient came under our observation from whom a gangrenous appendix had been removed through a mid-line incision with drain inserted through a stab wound on the right side near McBurney's point. This patient had three fecal fistulae—one at the site of the tube, one just above the symphysis pubes at the lower angle of the wound, the other occurring at the upper angle. Had the drain been inserted into the pelvis through the lower angle of the wound, the probabilities are that she would have gotten well without any fistulae at all.

We usually remove the drain on the third day. If not, it is loosened and removed on the four or fifth, according to the indication. A smaller tube is inserted, which is allowed to remain in situ several days longer, the wound being irrigated through the smaller tube every four hours. This is continued until there is no sign of drainage or sloughing, after which the site where tube was removed is drawn together by a narrow strip of adhesive.

In all of the above cases, where the wound showed any signs of infection or tendency to break down, the skin suture was removed, the wound irrigated with a two per cent Dakins solution, the edges being approximated with narrow strips of adhesive. These wounds were then irrigated every four hours until they took on a healthy appearance, which required about four days. Some few cases were more stubborn, but with careful attention the objective was gained in a very short time. With the above method we had very little fascia slough and seldom a hernia. In the above series we had only three hernias, or

1.35 per cent, yet all of them occurred in cases coming under the second class, of which there were sixty-six cases, sixty-one of which were drained, giving a percentage of 4.54. The majority of this group were desperate cases.

In dealing with wounds in which there is unhealthy granulation we do not think it bad practice to take a piece of gauze and, under aseptic conditions, break down the granulations, wiping them off in the manner of a curette. The wound is then irrigated every four hours or oftener, if necessary, to keep it clean.

In the closure of these wounds we use No. 1 plain catgut for the peritoneum; No. 2 plain for the fasciae and No. 1 plain for the skin. In desperate cases, where we fear sloughing, the fasciae is closed with No. 2 chromic. Silk worm sutures are never used, as they only disseminate the infection more widely through the tissues, giving a greater area of wound infection and producing more extensive fascia slough. Sutures are only necessary for the approximation of tissues which will unite if not infected and the patient has no systemic disease. Otherwise the wound will break open regardless of the amount and kind of suture employed.

In applying the primary dressing following the operation we think it very essential that the abdomen be supported with long strips of adhesive plaster which are applied transversely from below upward, beginning at the symphysis pubes and ending at the umbilicus, giving each strip a fourth of an inch lap. This supports the abdomen, takes all strain off the wound during emesis, and produces physiological rest which cannot be obtained in any other manner.

POST-OPERATIVE TREATMENT.

Many men who are doing surgery seem to have the idea that as soon as the operation is successfully over their work is done, and then it is up to the patient and his God to complete the case, principally the patient. It is for these reasons that such a large percentage fall by the wayside.

To our mind the post-operative care of

these patients is as essential, if not more so, than the operative care. Seventy per cent of them will require but very little care after the operation, but the other thirty per cent will require a great deal.

Our method in dealing with these cases, after they are returned from the operating room, is to see that they are properly placed in bed and are warm. The bed is placed in Fowler's position, the head being elevated about ten inches. This favors the settling of peritonitic exudates into the pelvis to the site of the drainage tube. It also prevents a rapid absorption, as it is a physiological fact that the pelvic peritoneum absorbs more slowly than the peritoneum above the level of the umbilicus.

As soon as the patient reacts, protoclysis is started by the Murphy method, which consists of a drip can of one or two quarts capacity with a large rubber tube attachment, terminating in a glass tip, bent at an obtuse angle, this angle being about two inches from the tip, which has numerous openings that will permit of an easy return of the fluid from the rectum back into the can, thus preventing their expulsion into the bed. The can is placed about six inches above the buttock, the tip is inserted into the rectum and firmly strapped to the thigh with adhesive. After placing the irrigating apparatus it need not be disturbed for several days unless it is desired to increase or decrease the influx. The fluid should be kept warm at about 100 degrees F., which is easily accomplished by placing an electric light bulb in the drip can. This is a fool proof arrangement both for the patient and the doctor. Any improvement on this device will meet with disaster.

By this method these patients receive one or two pints of tap water by rectum every four hours, which is rapidly absorbed into the circulation, elevating a fallen blood pressure, diluting toxins, promoting elimination, quieting the thirst, lessening nausea and relieving abdominal distention by stimulating peristalsis and allowing the expulsion of gases. If the drips are not readily taken up we give the patient an enema,

and then start the drip, after which we have no trouble. We give but very little water by mouth until the patient has entirely recovered from the effects of the anesthetic and has no nausea or tendency to vomit. We think it bad practice to give these patients ice, as it aggravates their condition. If water is given by mouth let it be warm.

We do not administer pituitrin for abdominal distention, where there is much peritoneal involvement, as it is liable to do them harm instead of good. If you resort to the drip you will have very little cause to use it.

Morphine. Morphine seems to be a great drug in the armamentarium of many surgeons, and they shoot the patients right along, telling the nurse to let them have it when necessary to make them comfortable. The humane principle is to be admired, yet it is a bad practice, as it checks the secretion, stops elimination, produces abdominal distention, slows the respiration, paralyzes nerve centers which are already more or less paralyzed from the toxemia of the condition, giving you a patient that presents the picture of one who has "lost all fear of that undiscovered world and is prepared to shuffle off the mortal coil." Morphination of these patients is bad practice. They suffer very little, especially those that are seriously sick. The toxemia anesthetizes their pain, thus requiring the use of very little morphine. We usually give these patients one or two hypodermics of morphine after operation as the case may demand, never leaving it to the discretion of the nurse.

The scope of this paper will not permit of a further discussion of the treatment. Feel-

ing that we have covered the essential points, we shall leave the remainder of the treatment for you.

Mortality. In the above series of 222 cases there were five deaths, giving a mortality of 2.25 per cent. The causes of death were as follows: Three were due to general peritonitis; one from pneumonia, and one died the third week following the removal of a ruptured appendix. Out of the entire series there were fifteen cases of general peritonitis, or a percentage of 6.75. Of the fifteen cases, three died; a mortality of 20 per cent from general peritonitis. The patient who died from pneumonia was operated upon for appendicitis and a gangrenous appendix was removed. He had some acute pulmonary trouble prior to the operation, but we thought this trivial and proceeded to remove the appendix. He was operated on at 10:00 p.m., and died at 10:00 a.m., with a temperature of 107, pulse 120, respiration 44. As to the case that died at the end of the third week, we are unable to explain the cause, unless it was due to lumbricoids. His wound separated on or about the eighth day. He ran a low grade temperature, no abdominal distentions, gradually lost strength until at the end of the third week he died.

In conclusion, we wish to say that if the above rationale of treatment is followed in the treatment of acute and suppurative appendicitis, that when your day's work is finished, and the shades of night begin to fall, that you will be more able to "tuck the draperies of the couch about you and lie down to pleasant dreams."

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REDUNDANT COLON*

TWO CASE REPORTS

R. S. E. MURRAY, B.A., M.D., National Sanatorium, N. H. D. V. S., Tennessee

IN presenting this discussion of the redundant colon, the argument shall be confined to colonic abnormalities, which have taken place since early childhood. Such intestinal conditions as Hirschsprung's disease, Meckel's diverticulum, Jackson's membrane, etc., are strictly congenital and thus do not fall into the classification of cases about to be described. A still smaller group is also rejected from our subject material, namely, those cases of colonic redundancy which may possibly be due to a fairly common congenital mesocolon subtending the ascending colon before the hepatic flexure is reached, and a similar mesentery subtending the descending colon, before it joins the sigmoid coil. However, these few cases present practically the same symptomatology, and react to the same therapeutic measures, which will be duly noted in association with the cases under discussion.

The fact that colonic redundancy and its attendant ills is of relatively common occurrence should provoke no little interest. Every general practitioner should be able to call to mind several current cases, which present the typical symptoms. Of course, certainty of diagnosis only lies between roentgenology and surgery. At this point it would be fitting to emphasize that the diagnosis of redundant colon is really an offspring of the roentgenology of the alimentary canal. One should be assured of a complete visualization of the whole tract. For this reason all suspected cases should be studied both by an opaque barium sulphate meal and an opaque clyster. Only in this way can there be full realization of the immense value of roentgenology in the

co-relation of the anatomy, physiology, chemistry and pathology of this interesting intestinal abnormality.

ANATOMY.

The anatomy of the colon gives us a surprising insight into the condition under discussion. The total length of the average adult colon is about 190 c. m. The width varies from 75 m. m. to about 37. This reduction in size is graduated towards the rectal extremity. The colon is anatomically divided into six distinct parts, namely, the caecum, ascending, transverse, descending, iliac and pelvic colons. The caecum is about 6 c. m. long and has a complete serous covering, which allows of considerable movement. The various congenital types of caecum have no bearing on the subject in hand, so will but receive this passing comment. The ascending colon measures about 12 c. m. in length. Its posterior surface is free from peritoneum. Thus the movement of this portion of the colon is quite confined. The transverse colon is the elongated, sacculated section of the colon. It averages 48 to 50 c. m. in length, which is easily more than double the straight line between its extremities. This sacculaton or haustration of the colon is a marked anatomical feature. It is due to the presence of three longitudinal muscle bands or taeniae. If these bands be cut, the intestine becomes a simple tube and increases in length one quarter more. The transverse colon has both a tunica serosa and a well-developed mesentery, which allows of wide variation in the position of the bowel in the abdomen and pelvis. The descending colon is 12 c. m. long and incompletely invested by peritoneum. Here, again, the movability of the bowel is much restricted. The iliac colon or sigmoid flexure is about

*Read before the Eastern Tennessee Medical Society, May 7-8, 1925.

another 14 c. m. in length and is also without full mesentery. The pelvic or sigmoid colon is of great variation in length. Differences of a few centimeters to almost a full meter have been observed; 40 c. m. might be considered a fair average. It is fully invested with a serous layer and has a well developed mesocolon, which provides for wide excursions. The posterior surface of the mesentery with the bowel in the pelvis, can become the anterior surface should the bowel rise into the abdomen. It joins the rectum at a point when the serous covering of the intestine ceases. The rectum is not a part of the colon, is about 14 c. m. in length, and entirely lacks the tunica serosa. The salient anatomical features are that the transverse and pelvic divisions of the colon have a definite mesentery which allows wide latitude for change of position, whilst the remaining portions of the colon are more or less tied down posteriorly.

PHYSIOLOGY.

The physiology of the colon is a very important factor in the full understanding of colonic redundancy. As has been previously mentioned, the colon rapidly narrows as it proceeds towards its rectal termination. This narrowing is the direct outcome of the balance resulting from rapid reduction in the intestinal contents due to the loss of large amounts of water and soluble chemical substances. The large bowel produces no ferments. Lubrication between the mucosa and the fecal mass is achieved through the secretion of a small amount of mucus. The haustration of the colon is the combined result of peristalsis and the contractile activity of the three muscular taeniae. Peristalsis, or the rhythmic contraction and dilatation of the circular muscle fibers is slow in the colon. As much as seven hours can be consumed in the crossing of the transverse division. The passage of the intestinal contents greatly depends on the active contractibility of the three longitudinal bands. Should these muscle fibers become atonic, the bowel lengthens, lacks tone and coloptosis with its attendant symptomological train supervenes. This condition

is only aggravated by the use of cathartics, enemata and straining at stool. These are the abuses which preface a pathological redundancy of the colon. Subsequent stasis and stoppage of the bowel causes occasional sub-acute inflammatory attacks, which often produce adhesions. The salient physiological features are that the colon loses a large amount of water and depends for its proper function on good muscular tone.

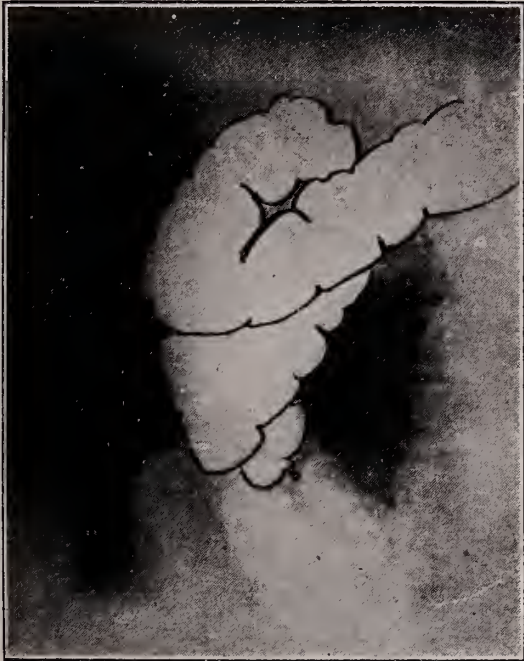
BIO-CHEMISTRY.

Much enlightenment on colonic redundancy can be gained from a little study of the chemistry of this portion of the gastrointestinal tract. The chemical reaction of the contents of the colon is slightly alkaline. With increased alkalinity, the fecal mass becomes a favorable medium for the propagation of putrefactive toxinogenic organisms. Up to a certain point no apparent harm is done. These bacteria split up the protein molecule into an endless number of substances, amongst which are the amino acids and derivatives such as indol, skatol and phenol. When the production of alkaline putrefactive bacteria becomes excessive, the amino acids themselves undergo chemical change and highly toxic substances are often formed. In this way putrescin, cadaverin, imid-azol-ethylamine, indol-ethylamine and oxyphenylethylamine are formed from arginin, lysin, histidin, tryptophan and tyrosin, respectively. Although in small amounts, the absorption of these toxins and others unrecognized, can produce a very serious clinical picture. In all such cases the urine should be carefully studied for the presence of indican. Any increase should be followed by quantitative analysis. It is felt that certain putrefactive bacterial flora are normally physiological in the large bowel. But the contrary opinion, fostered notably by Metchnikoff, has a large following. This view holds that all putrefactive bacteria are dangerous to the very life of the individual. We incline to this latter belief. Is not the most long-lived peasantry found today in Bavaria, where jugort, or clabbered milk, is the main staple of diet? The salient bio-chemical features are that the intestinal contents

may bear an increased alkalinity associated with the local discomfort of flatulence and the general systemic effect of auto-intoxication. It might be of interest to mention here that chronic intestinal intoxication can even produce a psychosis. Cotton says, "From our experience in the last seven years, I would say that in at least fifty per cent of the cases suffering from functional types of psychosis, one of the sources of toxæmia is colon stasis. Out of 200 cases operated on by Lane's modified technique, which consists of simply releasing adhesions, some seventy-five in the last year

ROENTGENOLOGY.

From the x-ray standpoint colonic redundancy is grouped anatomically into two types. Type one redundancy is that involving the transverse colon, and type two that involving the pelvic or sigmoid colon. Diagnosis is comparatively easy when combined fluoroscopy and radiography is used. The course of the advancing enema is carefully mapped out on tracing paper placed over the horizontal fluoroscopic screen. This tracing is subsequently checked by skiagrams. Marked colon stasis always attends the examination of these patients. Often



Case No. 1. Barium Enema.



Case No. 1. Barium Meal.

have recovered mentally. About 100 cases have not shown any improvement.. These were cases showing a redundant colon, and we are now operating on them a second time. At the second operation it has been found necessary to resect . . . the redundant portion of the descending colon. Usually the mid-portion of the transverse colon is joined to the lower part of the descending colon. The dangers of such an operation are practically nil, as we have not lost a single case from left side resection." (From a recent letter.)

the presence of large quantities of barium sulphate can be seen in the haustrations of the colon for days. From several cases of both types I have selected one example of each.

SYMPTOMATOLOGY.

Apart from the physical feelings of malaise, nausea, indigestion, headache, muscae volitantes, constipation and the psychic feelings of depression, lack of ambition, hypocondriasis (in severe cases), which, of course, characterizes most chronic toxæmias, the symptoms are nearly always re-

ferable to adjacent anatomical structures. In type one, a palpable lump is frequently noted high up on the right side. This is attended with pain on the same side and around at the back. Care must be exercised to rule out chronic cholecystopathies, appendicitis, oophoritis, salpingitis or some nephropathy. In type two, the pelvic organs or urinary bladder may be wrongly accused. In both types the abdominal distention may approach meteorism, the pressure of which will cause the patients to have a sense of suffocation. Cardiodynia is often misleading. I have seen patients diagnosed as gall-

I repeat, "war-path," for it must be borne in mind that numbers of people have redundancy which seems to cause no trouble whatsoever.

THERAPEUSIS.

Treatment of colonic redundancy includes medication, diet, hygiene, physio-therapy and surgery.

Medication. The most important consideration in the medicinal treatment is reduction of the colonic stasis. This is not to be achieved through catharsis or ordinary enemata. Every effort must be made first to lubricate the colonic contents and second



Case No. 2. Barium Enema.



Case No. 2. 24 hours after.

stones, gastric ulcer and angina pectoris, all of which entirely recovered from therapeusis calculated to ameliorate redundancy of the colon, so finally diagnosed. An interesting phase of the symptomatology is its irregularity. These patients may be comparatively well for days and then suffer relapse. But as time goes on the severity increases, until social and economic stability is seriously menaced. Obstinate constipation, cathartic life, enemata, semi-invalidism, these are the common accompaniments of redundant colon on the war-path.

to promote the recovery of muscle tone. In the first regard, there are several palatable examples of mineral oil and agar-agar on the market. The amount taken will depend upon the obstinacy of each individual case. Before bedtime a low rectal injection of four ounces of olive oil should be administered. The retention of this throughout the night serves to soften the fecal mass. In the second regard increasing doses, three times a day, of the tincture of belladonna and nux vomica will increase the intestinal muscular tone, conserve the aqueous con-

tents of the bowel, increase the desire for the ingestion of water and stimulate the appetite.

Up to ten minims of belladonna three times a day can be administered with benefit. If the hydrochloric acid content of the stomach be low, it were well to give full doses of dilute hydrochloric acid. This will tend to aid digestion, reduce the alkalinity of the gastro-intestinal tract and raise the germical factor of the liquid contents.

Diet. In the beginning all meats must be barred. As the patient improves small amounts of meat eaten with large amounts of cereal food may be advised. The ideal diet is lacto-farniaceous. *Bacillus acidophilus* milk is extremely valuable. In the course of a few weeks the putrefactive flora can be competely ousted by the invasion of the lactic acid bacillus. Farinaaceous food should include cereals containing large amounts of husk or bran. This helps to increase the intestinal roughage. The use of salads, raw fruits, except stone fruits, and all vegetables which grow above the ground should be encouraged. Alcoholic beverages and clear soups are contraindicated. The latter provide too fine a culture medium for the growth of bacteria. Large quantities of water must be taken between meals to keep pace with loss from the colon by absorption. Moderate use of weak tea or coffee is not objectionable.

Hygiene. These patients should be in bed early, and sleep with plenty of fresh air. Immediately on arising two cups of hot water should be taken. As these patients tire very easily an afternoon siesta should be insisted on. In the matter of exercise, at first short walks only are advised. As improvement progresses more strenuous exercise may be undertaken. If the weather be inclement some definite mental stimulus must be provided, as time for retrospection retards ultimate recovery. Any form of occupational therapy is valuable.

Physiotherapy. Hydrotherapy is useful, in that it is a device for increasing excretion through the skin. The quick morning

shower cannot be improved upon. At first the temperature of the water should stand at blood heat. As improvement takes place the temperature may be lowered to that of cold water. A brisk rub-down should supplement the shower. Once a week a hot bath at bedtime is excellent. Electrotherapy is oftentimes of great assistance. Particularly is this so of the slow sinusoidal wave over the abdomen. The intestinal muscle fibers are toned up and treatment often followed by free evacuation of the bowel. Ultra-violet radiation of the whole body surface lowers calcium loss by reducing acidity and raising the metabolic rate. These patients should be well tanned with artificial sunlight. General massage should not be overlooked in the management of these cases. Tapotement massage stimulates the blood supply to the limbs and thorax, whilst petrissage is the movement of election for the abdomen.

Surgery. The application of surgery to redundancy of the colon is reduced to the treatment of certain extreme conditions. Volvulus and intussusception call for immediate action. Should the putrefactive intestinal flora be productive of certain ectotoxins, which carried to the brain by the blood stream combined with the protoplasm of the central cortex to produce a psychosis, then the longer that radical treatment is delayed the more danger is there of permanent damage to the psychic centers. Also the fact that these patients are often totally unable to cooperate with the physician makes operative interference the more imperative. Ordinary cases are not benefited by surgical procedure.

The ordinary run of cases demands a sound knowledge of the nice inter-relation of anatomy, physiology, bio-chemistry and pathology. Study these; study the patient and success in the treatment is assured.

CASE 1—EXAMPLE TYPE 1 REDUNDANCY.

Complaint. This patient complained of a soreness on the right side of the abdomen associated with the feeling of a lump in the abdominal cavity beneath the liver. Sometimes this lump disappeared. Duration was ten or fifteen years. Pains in the back and

lumbar region occasionally added to the misery. There were fairly frequent headaches. Chronic constipation was a *sine qua non*. A diagnosis of chronic cholecystitis had been made.

X-RAY INVESTIGATIONS.

Kidney Region. Stereoscopic examination shows kidneys normal in size, shape and position.

Gall Bladder Region. Stereoscopic examination of the right side of the abdomen shows a large irregular poorly defined hazy opacity, lying about midway between the anterior rib cartilages and the crest of the ilium. On palpation this mass is soft and movable. It is not definitely painful but rather tender. It can be easily sensed through the anterior abdominal wall, notwithstanding the fact that the omentum contains a large amount of adipose tissue. The following factors tend to look away from gall-bladder disease.

(1) The mass is not permanently present—this from the history. (2) Size. (3) Shape. (4) Movability.

Gastro-intestinal. No unusual features were encountered until the twenty-four-hour examination. At this time a large irregular appearing mass involving the large bowel was seen in the upper right abdominal quadrant. Palpation determined that the mass within the abdomen corresponded with this intestinal shadow. It was felt that the bowel was looped. The privilege of examining by opaque enema was requested and granted.

Opaque enema. The colon filled remarkably well. The presence of a redundant reversed hepatic loop was confirmed. Several skigrams were taken. The coils of the loop were adherent.

X-ray diagnosis. Redundant colon. Type 1, with adhesions.

Treatment was instituted towards amelioration of constipation and reduction of the loop. The dietary already outlined was advised. Mineral oil was administered. Particular attention was paid to exercising the abdomen and contents, *actively* by walks and calisthenics and *passively* by

massage treatments. Improvement was remarkably rapid. This patient has been seen once since the diagnosis was clinched.

CASE 2—EXAMPLE TYPE 2 REDUNDANCY.

Complaint. This patient's chief complaint was chronic constipation, headaches, dizziness with occasional heart attacks simulating an angina pectoris. Great apprehension was felt during these so-called heart attacks. At times the dull pain on the left side of the abdomen and thorax seemed to definitely localize in the left lower abdominal quadrant.

Duration. Gradually becoming worse for the last twelve years. Occasional periods of relief were experienced.

X-RAY INVESTIGATIONS.

Thorax. Stereoscopic examination disclosed normal appearing heart and lungs.

Gastro-intestinal. Again, as in case 1, no unusual features were encountered until the twenty-four-hour examination. At this time an irregular appearing mass evidently involving coils of some part of the colon was seen in the lower abdomen and pelvis to the left. Redundancy of the pelvic colon was suspected. The privilege of examining by opaque enema was requested and granted.

Opaque enema. The course of the advancing column of barium was carefully mapped out on tracing paper. Skigrams were taken. The pelvic colon was found to embrace a large non-adherent loop which could easily rise into the abdomen. During the fluoroscopic examination exquisite tenderness was noted on deep palpation over this redundant loop.

X-ray diagnosis. Redundant colon. Type 2, no adhesions.

(Note: Large quantities of barium sulphate remained in the colon for twenty-four hours.)

Treatment was begun at once. It required careful attention to every detail, as previously enumerated in the preceding paragraphs, before a satisfactory response was noted. This case has proved to be far more obstinate than case No. 1. Most nota-

ble improvement was registered with the increase of tincture of belladonna to eight minims three times a day. In both cases the use of cathartics and enemata was forbidden from the outset. I have not differ-

entiated between males and females, nor have I touched on the question of age. The sex incidence is evenly divided. The age incidence lies between twenty-five and fifty.

THE DIAGNOSIS OF EXOPHTHALMIC GOITER*

WILLIAM C. CHANEY, M.D., M.S., in Medicine, Memphis

EXOPHTHALMIC GOITER, according to Boothby, "is a constitutional disease apparently due to excessive, probably abnormal, secretion of an enlarged thyroid gland with pathologically diffuse, parenchymatous hypertrophy and hyperplasia. The condition is characterized by an increased basal metabolic rate and the resulting secondary manifestations, by a peculiar nervous syndrome and usually by exophthalmos with a tendency to gastro-intestinal crisis of vomiting and diarrhea."

As a working basis it is well first of all to classify the diseases of the thyroid gland. Plummer's classification, which is probably the most generally accepted, divides the diseases of the thyroid into nine groups:

1. Diffuse colloid goiter.
2. Adenomatous goiter without hyperthyroidism.
3. Adenomatous goiter with hyperthyroidism.
4. Exophthalmic goiter.
5. Myxedema.
6. Cretinism.
7. Myxedema of childhood.
8. Thyroiditis.
9. Malignant diseases of the thyroid.

In the diagnosis of exophthalmic goiter it will be necessary to refer in a general way to some of the characteristics of colloid goiter and adenomatous goiter with hyperthyroidism.

Since the subject under discussion is limited to diagnosis, it will be my purpose to consider those cases of exophthalmic goiter which offer the greatest difficulty to the clinician; the early and the mild ones; in other words, those border line

cases of exophthalmic goiter that are most likely to be confused with other conditions.

A moderately advanced exophthalmic goiter is very readily recognized for all of the classical signs and symptoms of the disease are usually exhibited, such as: (1) a symmetrical goiter with bruits and thrills; (2) bilateral exophthalmos; (3) a markedly increased basal metabolic rate; (4) tachycardia with a high pulse pressure; (5) tremor; (6) great weakness in muscular strength, especially marked in the quadriceps extensor muscles, and many other features that point to this type of goiter. The clinician's problem in such advanced cases of exophthalmic goiter is not so much of diagnosis as of recognition of those features of the disease which influence prognosis and which, if properly recognized and combated, will reduce the surgical mortality to a surprising degree, probably from twenty-five per cent to two or three per cent.

In the routine examination of patients the physician usually looks for a few signs or symptoms of a disease that serve as a lead to further investigation and in this way attempts to develop sufficient evidence to establish a diagnosis. When a patient with exophthalmic goiter of the border line type enters the physician's office for the first time there are several features that may be noticed which suggest a condition of hyperthyroidism. The patient appears to be stimulated and seems unduly excited. The facial expression is that of fear and the demeanor may indicate a lack of confidence. While there may have been but little physical exertion in walking to the office, the appearance is that of one who had been en-

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gaged in violent exercise; there is a look of warmth and the skin appears to be moist with perspiration. When, however, the first impression of the patient is supplemented by a few questions, it is revealed that the facial expression and the demeanor of the patient with exophthalmic goiter are not due to the presence of the emotions of fear and shyness, as is the case of the neurotic individual.

A carefully taken history of the patient's illness in exophthalmic goiter is of very great diagnostic importance and often helps to establish a diagnosis in the



The failure to feel the thyroid gland in many patients with exophthalmic goiter is probably due to improper methods of palpation. The gland is palpable in over 99% of these cases.

early or mild case when the physical examination reveals but little of importance and the metabolic studies are inconclusive. Too much emphasis cannot be placed upon the importance of making clear three points: first, has the patient noticed an increase in appetite? second, has there been a lack of tolerance for heat; third, has there been a loss in weight in spite of an increase in appetite? Probably there are only two dis-

eases in which loss of weight has accompanied a definite increase in the appetite, and these are hyperthyroidism and diabetes mellitus. The patient with a toxic goiter has noticed for some time that he has needed less clothing, and less covering has been necessary at night. Oftentimes it requires much questioning to definitely establish this fact. This lack of tolerance for heat is constantly present and must not be confused with the "hot flashes" that occur in certain of the neuroses. The loss in weight in exophthalmic goiter is almost a constant finding, yet at the very incipency of the disease the patient may actually increase in weight. This gain is usually temporary, however, and corresponds to the time when the over-stimulation by the thyroid is sufficiently slight to merely produce a tonic effect. It may be said, therefore, that the diagnosis of exophthalmic goiter must be made with great caution if the patient is not losing weight. The course of the illness in exophthalmic goiter is a variable one, with periods of remission and exacerbation. This rather characteristic feature of the disease should be brought out in the history, both because of its diagnostic importance and its value from the standpoint of surgery. To operate upon a patient when the course is downhill, or immediately preceding a crisis, is a serious matter, because the mortality rate at such times is very high.

A period of exacerbation, when at its worst, is known as a crisis, and it is important to make a record of the number and the severity of the crises the patient has already had. A severe crisis is usually ushered in by profound weakness and restlessness so that the patient must remain in bed. The degree of restlessness can usually be determined by observing the amount of redness about the patient's elbows. The weakness progresses rapidly and soon there are added the distressing symptoms of nausea, vomiting and diarrhea. The condition at this time may even simulate typhoid fever. A state of acidosis usually develops and becomes

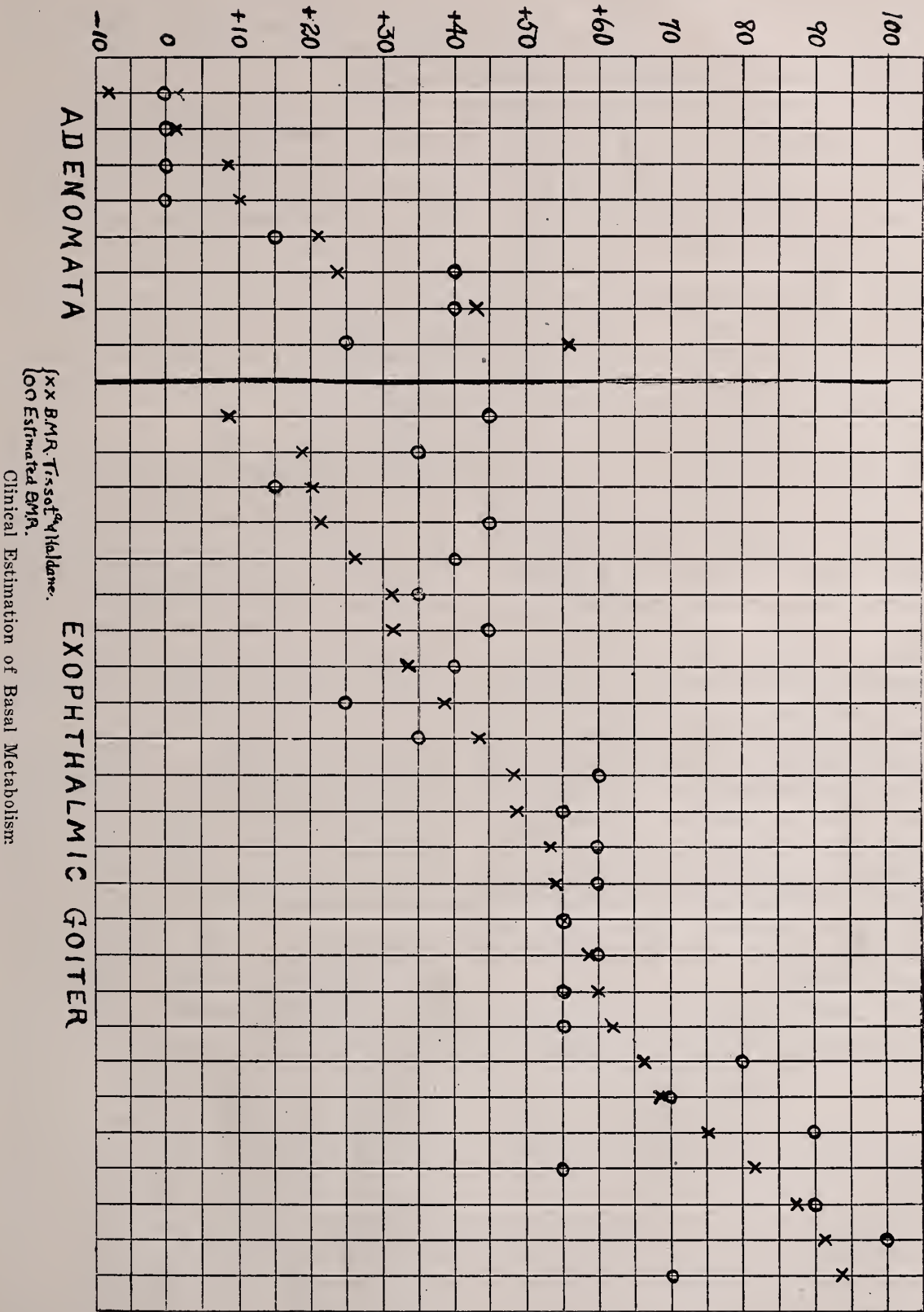
marked, and must be given immediate consideration. In offering an explanation for the acidosis in goiter crises, Boothby states that these patients burn from 4,000 to 5,000 calories a day. If no food can be taken on account of the vomiting they burn their own fat at the rate of 400 to 500 grams, or approximately one pound of fat each day.

A thorough and complete physical examination is highly important in exophthalmic goiter because of the many secondary degenerative changes that may be present, especially in the cardio-vascular system, but in this discussion emphasis will be laid only upon those findings that are directly related to diagnosis, the more important of which may be summarized as follows: first, the size and shape of the thyroid gland, and the presence or absence of bruits and thrills; second, the presence or absence of exophthalmos; third, the degree of weakness of the quadriceps muscles; fourth, the determination of the pulse pressure; fifth, whether there is a decided stare. This stare is important and is not necessarily associated with exophthalmos. Of less importance are: one, objective body warmth; two, the presence of a sour or musty odor of the perspiration; three, atrophic finger nails; four, tremor; five, the classical eye signs of vonGraefe, Stellwag and Moebius.

In exophthalmic goiter the thyroid gland is symmetrically enlarged and is palpable in over ninety-nine per cent of the cases. The gland is usually quite firm and feels granular in contrast to the colloid goiter, which is usually soft and homogenous. In eighty per cent of these patients bruits may be heard over the thyroid vessels, being loudest over the superior thyroid arteries. The presence of a bilateral exophthalmos of recent origin, of course, is almost conclusive evidence of exophthalmic goiter. The degree of exophthalmos, like the size of the thyroid gland, and even the elevation of the basal metabolic rate, does not necessarily vary with the seriousness of the disease. The

weakness of the quadriceps extensor muscles is not mentioned in most discussions of this disease, yet it is of very great diagnostic importance. Probably this weakness is best determined by having the patient step upon some object slightly higher than an ordinary step, such as the step of an examining table. The degree of weakness of these patients is sometimes surprising. The pulse pressure in exophthalmic goiter is always greater than normal and differs from increased pulse pressure in aortic regurgitation, in that the diastolic pressure is usually not much affected. The perspiration of many patients suffering with exophthalmic goiter has a sour, musty odor that is oftentimes recognized by the physician the instant he enters the examining room. Not infrequently the patient complains of an inability to entirely overcome the disagreeable feature of the disease. The finger nails may be spoon-like, being flattened and somewhat turned up at the ends. The outline of the nail bed at the end of the nail is frequently quite irregular and for this reason cannot be kept clean.

The chief laboratory aid in the diagnosis is pre-eminently the basal metabolic study. The basal metabolism, if properly estimated and a dependable apparatus used for the determination, should give an accurate record of the degree of hyperthyroidism, but the result obtained should be used only to verify the diagnosis. To depend solely upon metabolic determinations for the diagnosis of hyperthyroid conditions, will lead the internist into many errors unless tests are repeatedly made. A psychoneurotic individual is very likely to have an increased rate on the first two or three tests, and unless great care is exercised by the clinician the condition may be diagnosed exophthalmic goiter. By far the most reliable apparatus for basal metabolic determinations is the Tissot gasometer and the Haldane gas analysis apparatus. The Goetsch test, or the use of epinephrin as a diagnostic procedure in toxic goiter, has been



of no value in the hands of most investigators and has caused considerable confusion.

An internist experienced in the use of Lugol's solution in exophthalmic goiter patients, and who has noticed amelioration of symptoms following its administration, may use this solution in questionable cases and obtain considerable information of diagnostic importance.

Attention has already been called to the fact that basal metabolic determinations are frequent sources of error in diagnosis. Probably the next greatest source is the failure to make a careful differential diagnosis between exophthalmic goiter and such conditions as colloid goiter, multiple adenomata with hyperthyroidism and the neuroses.

It is very important to differentiate clearly between exophthalmic goiter and multiple adenomata with hyperthyroidism. Lugol's solution is of great therapeutic value in exophthalmic goiter, but may be harmful in adenomatous goiter. There are certain phases in the course of exophthalmic goiter in which the surgical risk is much less than at other times. In adenomata with hyperthyroidism the surgeon removes only the adenomata, while in exophthalmic goiter a large part of the gland must be resected. The operative risk is usually slightly greater in multiple adenomata with hyperthyroidism than in exophthalmic goiter, but the post-operative outlook is better if there have been no secondary degenerative changes in the various organs.

In nearly one-third of the cases of exophthalmic goiter small adenomata may be present within the gland. The presence of bruits and thrills and the history of an irregular course of the disease should lead to the diagnosis of exophthalmic goiter in spite of the irregular contour of the thyroid gland. In exophthalmic goiter, especially in the early cases, the symptoms are pre-eminently those of toxicity, while in multiple adenomata the outstanding features are mostly cardiac in origin. Multiple adenomata with hy-

perthyroidism produces a nodular goiter. There are no bruits or thrills and the eyes are normal. The history is one of an even course with a very gradual increase in the symptoms.

The colloid goiter is a diffuse, soft, symmetrical enlargement of the thyroid gland. It occurs in two types, (a) vascular, (b) non vascular. The vascular type, because of its bruits, is frequently confused with exophthalmic goiter, but it must be borne in mind that colloid goiter occurs in adolescence and is distinctly an expression of a deficiency on the part of the thyroid gland. For this reason it is frequently associated with a subnormal metabolic rate.

The classic "neuro" is next considered, for from time immemorial he has been a victim of surgery, and so he is found being operated upon frequently for exophthalmic goiter, or having his thyroid gland treated with x-ray. The particular types of neuroses to which I wish to refer are those variously classified as "cardiac neurosis," "disordered action of the heart," "neurocirculatory asthenia," "neurasthenia," and "effort syndrome."

A careful analysis of the outstanding features, both mental and physical, of hyperthyroid states and of neurasthenic types of individuals makes the differential diagnosis quite simple. The entire demeanor of a neurasthenic patient is different from that of the person with exophthalmic goiter. In every action the neurasthenic displays fatigue, but the fatigue is more apparent than real. The patient with exophthalmic goiter, on the other hand, attempts to conceal his weakness and when he finds that he is unable to step upon the examining table he is greatly surprised and makes a second attempt. The neurasthenic is "too cold" rather than "too warm," and he complains of a failing appetite. His weight is practically normal. In contrast to this, the patient with exophthalmic goiter is losing weight in spite of the fact that he eats one and a half to three times the amount of food consumed by a normal individual.

HYPERTHYROIDISM

NEURASTHENIA

1. Too warm	Too cold.
2. Losing weight	Weight not affected.
3. Increased appetite	Appetite failing.
4. Objectively warm	Cold hands and feet.
5. Enlarged thyroid	Thyroid not enlarged, but may be.
6. Pulse pressure increased	Normal pulse pressure.
7. Quadriceps weakness	Quadriceps normal.
8. Elevated B. M. R.	B. M. R. if elevated returns to normal with rest.
9. Sits erect	Lounging position.
10. Facial expression of fear, but not fearful ..	Fearful, but facial expression calm.
11. Weakness more real than apparent	Weakness more apparent than real.
12. Self-confident and optimistic	Pessimistic.

SYMPTOMS OF HYPERTHYROIDISM

1. Increase in warmth.
2. Increase of appetite.
3. Loss in weight.
4. Elevated B. M. R.
5. Quadriceps weakness.
6. Increase in pulse pressure.
7. Tremor.
8. Rapid pulse.
9. Atrophic changes of nails.

EXOPHTHALMIC GOITER

ADENOMATA WITH HYPERTHYROIDISM

Symmetrical Enlargement of Thyroid	Nodular Goiter.
Bruits in 80% and Thrills	No Bruits nor Thrills.
Exophthalmos and Stare	Eyes normal.
Course of Disease Irregular	Course regular.
Duration of Disease 1-2 Years	Duration 3-4 years.

Because of the rather unstable nervous system, the neurotic individual may have an elevated basal metabolism rate, but this will always drop to within normal limits when the test is repeated, especially if the patient is kept in bed for twenty-four hours before the test is made. While the neurasthenic patient may have a rapid pulse, the pulse pressure is always within normal limits.

In many instances the neurotic patient who is finally operated upon for exophthalmic goiter leads the clinician into making an incorrect diagnosis by a peculiar psychologic method. When this patient is seen for the first time he is classified as a certain type of neurosis. The patient in his eagerness to get well makes repeated trips to the doctor's office, each time with the same report: that he has not improved under any of the treatment given. The doctor is finally at his wits end and is at a loss to know what to do next. He then begins to speculate upon possibilities and wonders if an abnormal

condition of the thyroid gland may not explain the whole clinical picture. At this time, after his judgment has been warped by his failures of the past, he is able to find many of the signs and symptoms of hyperthyroidism.

The diagnosis of exophthalmic goiter today is made with far greater accuracy than was possible several years ago, but even now imperfect methods leave much to be desired. The diagnosis of the so-called "border line case" will always be a difficult problem, for as we improve our diagnostic acumen there will always be a group of "border line cases" that will seem just beyond the grasp.

SUMMARY.

1. The diagnosis of a moderately advanced exophthalmic goiter is very easy for all of the classical symptoms of the disease are exhibited. It is the early or the mild cases which are most likely to be confused with other conditions.

2. The general appearance of a patient with exophthalmic goiter suggests a con-

dition of hyperthyroidism. The facial expression is that of fear and the demeanor may indicate a lack of confidence. There is a look of warmth and the skin appears moist with perspiration.

3. In the clinical history emphasis should be placed upon the development of three characteristics of hyperthyroidism: (a) a lack of tolerance for heat, (b) an increase in the appetite, (c) a loss of weight. There are only two conditions in which there is a loss of weight in spite of an increase in the appetite. These are hyperthyroidism and diabetes mellitus.

4. The physical examination should be very thorough, and it is highly important to record information concerning (a) the size and shape of the thyroid gland, and the presence or absence of bruits, (b) the presence or absence of exophthalmos, (c) the degree of weakness of the quadriceps muscles, (d) the pulse pressure, (e) whether there is a stare, (f) objective body warmth, (g) presence of a musty or sour odor of the perspiration, (h) atrophic finger nails, (i) tremor.

5. The laboratory aid in the diagnosis is pre-eminently the basal metabolic studies and the most reliable apparatus for this purpose is the Tissot gasometer and the Haldane gas analysis apparatus.

6. Exophthalmic goiter must be differentiated from colloid goiter, multiple adenomata with hyperthyroidism and the neuroses.

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HOSPITAL STANDARDIZATION*

C. N. COWDEN, M.D., F.A.C.S., Nashville

YOUR Committee on Hospitals, appointed by President Smythe for the ensuing year, submits for your consideration the following report:

The object of this report is to do for the small hospital, consisting of twenty-five beds or less, what the American College of Surgeons and the A. M. A. have done for the larger hospitals of the United States. A survey of the large hospitals revealed the fact that there was no uniform standard of efficiency and scarcely any two of them were operated upon the same plan; hence the great work of standardizing the larger hospitals was undertaken. The plans that they adopted to better these hospitals, with one hundred beds or more, consisted of a minimum standard of equipment. This plan is doubtless familiar to you all and I will not go into detail.

It grew out of clear thinking minds with a vision and a proper perspective, in search of ways and means to improve medicine and surgery. The originators of the movement, in looking over the hospitals, discovered a great need in the improvement of the service that was being rendered to the sick, and they formulated this practical plan to remedy this condition by adopting this minimum standard of requirements. Although this standard is minimum in name, when a proper interpretation of it is made, it shows that it is maximum in effect, and when applied it has a far-reaching, beneficial influence on every department of the institution, and this aggregate effect of all these departments working in unison, showed better and more satisfactory results at once.

This program was immediately adopted by all the leading hospitals of the country and proved a great success from its very beginning, because of the intense interest and influence of the members of the college who were serving on the staff of the hospitals where it was being adopted. The benefits and advantages of a standardized hospital has been so apparent, not only to the doctor and surgeon, but to hospital trustees, superintendents, internes and nurses who, becoming familiar with its efficiency, realized that the people for whom the hospitals were built and who support them, will soon demand that all the institutions for the care of the sick shall meet this standard or some standard of minimum efficiency, or they will be left out in the cold for lack of patronage.

In a very true sense, our hospitals may be considered as a measure of our civilization, not only for a community or city, but even for a people. How do we treat the sick and afflicted? Have we provided for them in any way to render them the best service possible? Are we demonstrating in any practical way that we are our "brother's keeper"? In some instances I must say that the answer would cause us to hang our heads in utter shame when we realize what we have done or what we are doing for our city, our town or our community along this line.

The hospitalization of the sick is a big problem of today. On an average, one out of ten persons in the United States went into hospitals for treatment last year; or almost ten million of people pass through the hospitals of our country yearly. The outlay for the maintenance of this vast throng was approximately one billion dollars. When we realize this, we

*A committee report, as Chairman of the Committee on Hospitals, read before the House of Delegates of the Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

can see how essential it is that the public be intelligently informed as to hospitals and the service that they are expected to render. It is true, and everyone knows that it is true, the highest medical and surgical efficiency, and the best results can be obtained, only in hospitals of sufficient size to afford complete diagnostic, therapeutic and operating facilities. This demands an outlay of money far beyond the reach of the smaller hospitals. Nevertheless there are and always will be small institutions for the care of the sick where these larger hospitals could not be maintained. The equipment and maintenance of the larger hospitals has entailed an enormous outlay of money, and to meet the added expense, the hospital fees have been so increased, that many self-respecting persons of moderate means, and with an in-born native pride that debars them from accepting anything that smacks of charity, cannot secure the needed help for themselves or their dependents from the hospitals as they are run in the larger cities. This group far outnumbers any class of patients that go to a hospital, and they constitute the bone and sinew of any community in which they live. The millionaire and the pauper are well looked after, but this large intermediate class has very little offered to them that is in their reach. The expense to and from the hospital, the hospital fees, the laboratory, x-ray and operating room charges, with the special nurses' bill, strips them financially and leaves them nothing to pay the physician or surgeon. And when their fees are added to be paid later, it is nothing less than a financial calamity in every home.

We are not saying that the cost in these larger hospitals is too high for the service rendered, but is too great a burden for them to willingly assume, and hence becomes prohibitive to them. We all know that every case that comes to a hospital does not demand all of this equipment to render satisfactory service to the patient. It is also well known from our daily experience that there are many emergency or

acute surgical cases which are not safely transportable.

There is an urgent need for the small hospital, and we believe there is a real work that can be done by this group of hospitals with from ten to twenty-five beds. In these small towns or communities, far removed from the large centers, the small hospital furnished, as far as possible, with modern equipment is a step far in advance of no hospital at all, and can render a great service in the community in which it is located. In these rural communities where these institutions are to be found over fifty per cent of the population are living. Hence we can see that it is reasonably plain that these hospitals serve a most worthy group who are entitled to efficiency in hospital service.

We hear a great hue and cry about the scarcity of physicians in the rural districts, and it is true that they are rapidly disappearing, and wide sections are to be found today with no doctor at all to minister to their needs. The reason for this state of affairs is not hard to find. The family physician, without access to hospital facilities, realizes that in the light of modern medicine he is badly handicapped and he is anxious to shift the responsibilities in many of his cases. The young man who is educated today is taught a medicine that he can not practice without the scientific agents to aid him. If he wanted to go to the country districts to serve the people he could not do it; he would be utterly lost, because all of his training has been with modern means and methods. Hence, we claim that the small hospital is the only solution to this urgent and perplexing problem. The people, also, as soon as they become seriously sick with any one of the large number of ailments, with complications, are no longer satisfied in the hands of the average doctor, and they are demanding that they be given the benefits of the expert specialist and the modern hospital. The family physician, without access to these institutions, realizes that he is

handicapped and is himself anxious to shift the responsibility.

I would here call your attention to the fact that the time is past when you can put a few beds, with a sterilizer and an operating table, into a dwelling and call it a hospital. The people are fast becoming educated up to the hospital idea, and they are learning to discriminate between the good and the indifferent, and they have long since realized that a palatial operating room and elaborate bed room furniture does not always mean a careful diagnosis, a skillful operation, well trained nursing and efficient bedside attention.

The hospital of the present day means a well equipped institution, thoroughly organized in every department; that has its x-ray apparatus, a good working laboratory in which urinalysis, blood count, sputum examinations can be made; efficient operating room equipment and facilities for the keeping of case records and case histories. Add to this a staff of from three to five men who are honestly living up to the highest conception of their duties to the patient, a small training school for nurses connected with it, presided over by a competent head nurse, and you have the ideal small hospital that the profession and the public are demanding and they are justly entitled to it.

Just how to secure this kind of an institution is a vital problem in these smaller towns and communities, and we are glad to note that the professional, industrial and social world are seriously working for its solution. Many of these smaller hospitals are not only having financial difficulties, but they are lacking in scientific equipment. Some have none at all to enable them to make a correct diagnosis. You would scarcely think that any could be found that did not have the means of making a urinalysis or a blood count, but such is the fact in more than one. Not only do we find these deficiencies, but we find men at the head of some of them who are lacking in sufficient technical knowledge to make the exami-

nations. We also find petty jealousies among the doctors that prevents co-operation and mutual assistance.

The man who undertakes to operate one of these hospitals single handed and alone, no matter where located or how well equipped, faces a tremendous burden, for he comes face to face with problems along many lines in which he is not well trained. Team work is the order of the day, and the pace is so rapid at the present time that few men are to be found who can at one and the same time fill all these positions. Nothing can defeat the purpose of one of these small hospitals more than the criticism and antagonism of the local profession.

In order that we can be of service to these small hospitals the first thing to be done was to make a survey of them, just to find out what was their true condition. In order to obtain the necessary data and information a questionnaire was sent to every county in the state, where there was a medical organization, and we received replies from fifty-one of them. This survey was not made in a spirit of criticism, but in a spirit of helpfulness to both the profession and the public.

We found upon examining statistics of recent date that we have 7,370 hospitals in the United States, with a bed capacity of 813,926. There are 2,966 hospitals with twenty-five beds or less, with a total bed capacity of 43,331. Tennessee has 110 hospitals, with a bed capacity of 10,507, and they are expected to serve 2,337,885 inhabitants of the state. They also receive patients from some of the border states. These hospitals are located in twenty-four counties of the state, with a population of 1,09,328, leaving seventy-one counties with a population of 1,260,557, with 1,088 physicians, with no hospital at all. The smallest county in the state with a hospital has a population of 15,056. The largest county with no hospital has a population of 43,338. Again, we find twenty-one counties with more than 20,-

000 to 43,000 population, with no institution to care for the sick. We have forty-four hospitals in the state with less than twenty-five beds, with a total bed capacity of 625, and among this number we find fifteen with less than fifteen beds. We find 33 1-3 per cent private and 66 2-3 per cent open to the profession. Two are run by the support of the community and sponsored by some social or charitable organization. The number of beds run from four in two hospitals up to twenty-four. From the questionnaires we learn that no case records are kept in 62 per cent, partially kept in five and no report from three. We find 50 per cent of them with no laboratory facilities. No routine examinations made in 64 per cent, only twenty-two equipped with a microscope. None employed a pathologist; nearly all sent specimens away for examination. Forty-four per cent are equipped with an x-ray; 86 per cent had no training school, and only four hospitals were run by a staff. So you can see after tabulating the returns from these questionnaires they vary all the way from being well equipped and with an efficient staff down to where one man was trying to run them with scarcely any equipment at all.

The committee recommends that we adopt some kind of standard of efficiency for them that will meet the modern up-to-date requirements of scientific medicine and surgery, and then by a campaign of education tell the public what it takes to constitute a hospital, then if these hospitals retain the confidence of the public they will have to meet with the requirements of the minimum standard. Your committee would suggest for the minimum standard the following: First, an adequate building, with space for a laboratory, operating and sterilizing

room; a laboratory where the examination of blood, urine and feces could be made. An x-ray apparatus, equipped for both therapeutic and radiographic work; a system whereby case records and case histories can be kept; a staff of from three to five members; a small school for training nurses, presided over by a competent trained nurse. Then, with a board of directors to look after the business of the institution, you have the basis for a hospital that can render satisfactory service to the sick. Anything less than this, as a minimum standard of today, could scarcely be called a hospital at all, and to attempt to run one with anything less would be, it seems to us, nothing short of a violation of a sacred trust. This, as a minimum standard, or something as near it as possible, should be adopted, and then some way found through educating the people up to the point where they will demand treatment in these standardized hospitals. An institution like this can be started and maintained most anywhere because it will merit and hold the confidence of the public.

By comparing the hospitals with their limited equipment, with the requirements of the minimum standard, you can see at once what a great improvement could be made in them if they could be induced to adopt this minimum standard of efficiency. The people in the counties over 20,000 inhabitants are able to support a small hospital, and we believe they will co-operate with any list of doctors who will assure them of their best endeavor and will work for the mutual good of them all. A sufficient length of time should be granted them to comply with the requirements of the standard, but educating the people should be begun at once and satisfactory results will follow.

REPORT OF A CASE OF MULTIPLE PIGMENTED HEMORRHAGIC SARCOMA OF KAPOSI*

HOWARD KING, M.D., Nashville

MULTIPLE pigmented hemorrhagic sarcoma of Kaposi was first described and named by Kaposi, a Vienna dermatologist in 1872. Since then it has borne his name. While it is a rare condition, it seems that most all cases have been of such interest as to be reported and consequently the literature has been by no means sparse on this particular subject. It might also be added that in all probability a higher percentage of the sum total of all cases of this disease has been reported since Kaposi's description than of most any other dermatological condition since its discovery. While all told there have not been over five or six hundred cases in these fifty-three years, most of them have been reported, and in some instances very extensive pathological investigations made. For this reason, I shall not attempt to review the literature other than to refer to a few of the investigations along certain lines. There are some peculiarities about this disease of such a nature as to have caused some controversy in the past as to whether it is a benign granuloma or a malignant neoplasm, but most all have concluded that it is ultimately a form of sarcoma.

Its etiology, like other malignancies, is unknown. It more often affects males than females and usually begins after the age of forty. It has been noted to occur more often in people of Jewish and Italian persuasion, although no particular nationality is exempt. I have been unable to find a report of a case in the full blooded negro race. It is thought to bear

some relation to poor peripheral circulation in the extremities, but there is no definite proof about this.

It begins on the extremities as erythematous areas, patches, or nodules which vary in color from pink to a deep dark purple. At first there is usually little or no nodularity and only reddish color and the areas are more or less scanty, but as time goes on nodules become more definite, more numerous and the dark purple color so pronounced that some nodules are the color of Concord grapes. While at first the nodules are more or less isolated, they later tend to agglomerate, creating a patchiness. The nodules vary in size from split pea to cherry. The areas chiefly involved are the feet, legs, ankles, hands and wrists. The dorsal surfaces are more often involved on the hands and fingers, but the palms and soles usually share to some extent in the process. The lower half of the legs and ankles are the most predominant areas. After the disease has existed several years, scattering lesions may occur on the thigh, neck or trunk. Rarely lesions have occurred in the mouth. In the terminal stages, visceral lesions occur, and are chiefly in the gastro-intestinal mucosa and mesenteric lymph nodes. The lungs, mediastinum, liver and spleen are not so often involved as in other types of malignancies. In the early stages of the disease there is sometimes slight itching and burning, or as the nodules advance a soreness, particularly on the palms and soles. Where the lesions agglomerate, there may be a persisting boggy edema, especially about the legs. Also about such areas on the feet and legs; the skin be-

*Read before the Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

comes thick and elephantiasic or regous in appearance.

The lesions develop rather slowly, taking from weeks to months, after which they may partially or almost totally disappear, to occur again in months or years. During the development of some lesions there may be pain which later subsides. The larger nodules are often slightly hollow to the feel and can be temporarily pressed out or perhaps inverted. There is little or no tendency to ulceration.

The progress of the disease tends to be slow, the duration being from two to twenty years. Most run along for a few years in fairly good general health and are often able to attend to duties which are not too strenuous.

Pathology—The changes of the skin lesions indicate that the growth is primarily in the corium. In the epidermis there is acanthosis and hyperkeratosis. In the corium there is hyperplasia of the capillaries where the endothelial cells are chiefly involved and a surrounding fibrous cell hyperplasia with multiplication and swelling of the nuclei, distortion of lymph spaces with deposits of masses of red blood cells which are thought to largely account for the pigment deposits. Pigment is also found in a deeper strata around the appendages. Some of the cells take on whorls of spindle type much like spindle celled sarcoma.

In a very extensive report made in Archives of Dermatology and Syphilology in February, 1925, comprising a histological study of a case autopsied by Dillard and Weidman of Philadelphia, they found changes in skin lesions similar to previous reports, but also found rather extensive lesions of the mucosa of the small and large intestine with a few in the stomach and in numerous gastro-hepatic lymph nodes found mycelia with spores and clamydospores identical to those producing favia. In this respect their case stands alone, and it remains to be seen what future investigations may show along this line. They seem inclined

to believe that this fungus infection may have some relationship to this disease.

Case Report—On April 21, 1919, Mr. J. H. Barber, of Decaturville, Tennessee, was referred to me for a skin eruption on hands and feet. Color, white, age 56, married, traveling salesman. Born in Alabama of Scotch, Irish and English descent. He was slightly less than medium height, fairly well nourished, slightly stout, healthy color, and stated that his general health had been good except for slight rheumatism. He had been raised a farmer, later was a merchant in the country, and for the past few years was a traveling salesman.

His family history and all previous illnesses were not obtained.

Present complaint was an eruption for the past five or six months, occurring on the left foot and both hands. It consisted of erythematous patches about the sole and dorsum of foot with three or four slightly purplish nodules or plaques which were tender and painful on walking. They also itched and burned at times and there was some pain about the ankle joint and slight edema about the foot. There was a similar eruption about both hands, but much less marked, there being hardly any on the left. On the right palm there were three or four lesions and one or two on the backs of the fingers. There was some edema of the middle and index fingers with slight burning and some pain about the joints of the right hand. No definite diagnosis could be made at this time, but I was of the opinion that it belonged to the erythema group, being either an atypical form of erythema multiforme, or a Shonleins Disease. At this time the urine was negative, and his general physical condition good, except for some carious teeth. Proper dentistry was advised at once, some bland lotions given locally, saline laxatives and Lugols solution internally. After about three months the pain and edema disappeared and most of the larger lesions subsided. He was not heard of again until February 7, 1924, when he appeared in the outdoor skin clinic at Vanderbilt Hospital, where I at once recognized him and also saw that my previous diagnosis was an error. He stated that during the period of five years the eruption had been much better until something like a year previously, when the lesions on the left foot and leg became much more extensive, the nodules larger and darker, rugous skin in patches, much more edema and considerable pain about the foot and leg on walking. The lesions had disappeared from the right hand and so remained, but similar lesions had occurred during the past year on the left hand. With the exception of some loss of strength and activity, and a slight loss of weight, his general health was still good. Photographs were made at this time, urine was negative, and Wassermann negative to cholesterine and acetone antigens. Now the picture was definitely that of multiple hemorrhagic sarcoma.

A nodule about 1 cm. in diameter was excised from the palm and the following histological report given by Dr. Terry: "The specimen consists of stratified squamous epithelium which shows externally a very thick layer of keratinized skin. Lying beneath this epithelium is a mass of spindle cells which are small, intensely staining, closely packed and have the arrangement of sarcoma of fibroma. There are spaces which may represent

thin walled blood vessels, but the blood is out of these spaces. No mitoses are obvious. The tumor apparently is slowly growing. In favor of its being sarcoma, is the intensity with which the cells stain and the closeness with which they are packed together, the specimen being extremely cellular. Against its being sarcoma is the lack of invasion of the epidermis." The patient was put on Fowlers solution of arsenic in ascending doses and was given three doses of x-rays over the left hand, foot and leg. He received a mild erythema dose through 2 mm. of aluminum, at an 8-inch gap, a month apart for three times, at the end of which time the lesions had all about disappeared, and he was able to get about well. Nothing more was heard from him until a few days ago I learned from an acquaintance that he died. On investigation, I find the death certificate shows death January 14, 1925. His attending physician stated that he had albumin and casts in the urine and thinks his death due to uraemia. He saw no evidence of visceral metastasis, and had been unconscious two days before death. No autopsy was done. I infer, however, from his physician's statements, that metastasis was by no means eliminated.

The diagnosis of Kaposi's sarcoma is easy when the case is once developed or for one who has seen other cases. The location and appearance of the lesions after nodules develop can hardly be confused with anything else.

Treatment—Most observers, especially the earlier ones, have all thought that arsenic in the form of Fowler's solution caused some improvement. Some have questioned this, as the cases usually show improvement from time to time. X-rays undoubtedly cause at least temporary regression of the lesions. There was a beautiful response to the Roentgen therapy in this case.

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J. F. GALLAGHER, M.D. ----- Editor
R. C. DERIVAUX, M.D. ----- Associate Editor

JUNE, 1925

PERIODIC HEALTH EXAMINATION

In this issue of the Journal will be found an address delivered by Dr. W. D. Haggard, President of the American Medical Association, before the recent meeting of our State Association in Nashville. It would profit every member of the association to read it and respond to the strong appeal contained therein.

The matter of periodic health examination is a laudable enterprise in keeping with the best traditions of the medical profession in the prevention of disease and the prolongation of life. It fits as snugly into the scheme of preventive medicine as the eradication of malaria and typhoid fever or the prevention of yellow fever and plague fits.

The extension of the span of life of man which has occurred in the past decade or two has been due to the reduction in infant mortality or the amelioration of the scourges of the infectious diseases. Search all modern medicine and it will be found that the death rate from the degenerative diseases is quite as high as it was a century past. Should the medical profession neglect that part of life which moved Browning to say:

"Grow old along with me, the best is yet to be;

The last of life for which the first was made."

And this movement of periodic health examination is the first step the medical profession has ever taken where they are rendering a distinct service to humanity

in the matter of preventive medicine and at the same time have it redound to their financial benefit. But the financial side of the matter is purely incidental for the medical profession has ever been unselfish in its ministrations to the sick and afflicted, or in instituting measures for the prevention of disease or the prolongation of life.

Periodic health examination has the unqualified endorsement of the American Medical Association and many state and county medical societies. Some county medical societies have inaugurated the plan by having the membership first subject themselves to such an examination and thus show to the community their sincerity in their belief in the wisdom of such a movement. The American Medical Association has prepared examination blanks as a guide to the physician in the examination and to enable the physician and the patient to keep a record of the findings. Also, a small guide in physical examination may be had from the same source as an aid. The cost of these are nominal—just a few cents.

It has been said that this movement did not originate with the profession, but it belongs to the profession. And it is certain that if the profession does not seize the opportunity and take what rightfully belongs to it, the life insurance companies and the so-called life extension institutes will as, indeed, they are already doing. It is the duty of every component medical society to foster this enterprise and sell it to the community in a dignified way. By so doing a distinct service will be rendered to the people and to the profession.

DEATHS

Dr. L. Hubert Milligan, aged 61, died at his home in Morristown, May 21st, after a long illness of disease of the heart. Dr. Milligan was a graduate of the University of Maryland, School of Medicine and College of Physicians and Surgeons.

Baltimore, in the class of 1890, and was a member at the time of his death of the Hamblen County Medical Society.

Dr. Wm. B. Moore, aged 90, died at his home in Brownsville June 10th. Dr. Moore was a graduate of the University of Nashville, Medical Department, class of 1866.

Dr. E. S. Rogers, aged 81, died June 28th, at his home in Knoxville.

NEWS NOTES AND COMMENT

Dr. R. E. Shelton has moved from Lynchburg, Tenn., to East Lake, Chattanooga.

Dr. W. S. Cooper, after an absence of two years, has resumed practice at Oneida.

The Unicoi County Medical Society is planning the erection of a hospital in Erwin, Tenn.

Dr. W. C. Duckworth, of Jackson, has been doing post-graduate work at Johns Hopkins Hospital, specializing in Gynecology.

The Chattanooga and Hamilton County Medical Society are contemplating the erection of a permanent home for the society at an estimated cost of about fifteen thousand dollars.

Dr. Beverly Douglas has returned to Nashville after spending fifteen months in the leading surgical clinics of Europe. Dr. Douglas received a degree of Doctor of Science from the University of Lyons. Dr. Douglas will be connected with the Chair of Surgery of the School of Medicine, Vanderbilt University.

The Trustees of the University of Tennessee have approved the contract for the first of a series of new buildings for the

Medical College to be erected in Memphis. The building will cost about three hundred and fifty thousand dollars. The erection of this building marks a definite step in the expansion program of the Medical School. This building will house the departments of Anatomy and Chemistry and will provide space for the instruction of Medical, Dental and Pharmaceutical students.

MEDICAL SOCIETIES

At a recent meeting of the West Tennessee Medical and Surgical Association the following officers were elected for the year: Dr. E. M. Holder, Memphis, President; Dr. J. W. Oursler, Humboldt, Vice-President; Dr. I. A. McSwain, Paris, Secretary; Dr. George McSwain, Assistant Secretary.

Hickman, Dickson and Humphreys counties have organized a Tri-County Medical Society. Their next meeting will be held in Centreville the first week in August.

AMERICAN ELECTROTHERAPEUTIC ASSOCIATION

The American Electrotherapeutic Association will hold its thirty-fifth annual session September 15th to 18th at the Hotel Drake, Chicago, Ill. Papers will be read by the leading men in the field of physical therapeutics and by invited guests of national reputation. A demonstration of actual technic of application of the various physical modalities will be given. There will be a complete exhibit of the largest electrotherapeutic apparatus and accessories. All legally licensed physicians are welcome and detailed program can be obtained by addressing Dr. Richard Kovacs, Secretary, 223 East 68th street, New York City.



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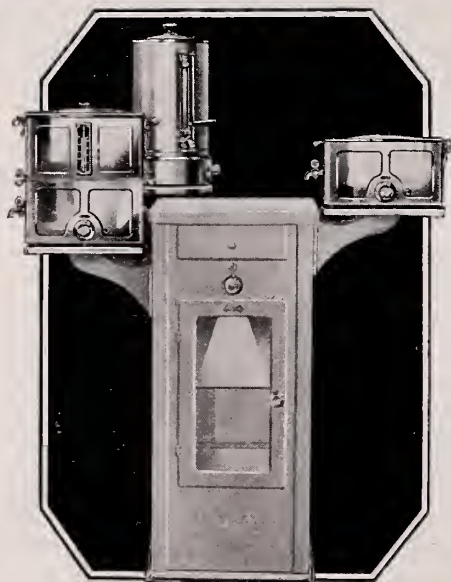
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Accepted by Council on Pharmacy and Chemistry American Medical Association. See page 258 in New and Non-official Remedies for 1924

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LIVER FUNCTION*

Robert Caldwell, M.D., F.A.C.S., Nashville

THAT the careful study of the function of so important an organ as the liver should have been neglected is really astounding. It has hitherto received but little consideration, especially in the every-day practice of medicine and surgery. For some time many of its functions have been known to the physiologist, but the practitioner has thought of it only as bile forming organ, when in reality bile is a by-product of liver metabolism. It is true that the bile assists in the digestion of fats, this is indeed a minor role. The liver possesses a greater variety of functions than any other organ in the body. We could surmise that its functions must be varied and many when we remember the important fact that all materials which enter the blood from the stomach, the small intestines and the proximal portion of the large intestines must first pass through the liver before it is permitted to reach the general circulation. The passage through the liver of varied toxic products which may be absorbed from the alimentary canal are thereby rendered harmless. The liver subserves a most important function when it takes from the blood any excess of sugar, storing in form of glycogen for future use.

It contributes to important changes in the intermediary nitrogenous metabolism. It supplies fibrinogen to the blood. It has much to do with the destruction of protozoa and bacteria that have been removed from the blood-stream by the spleen and the phagocytes which pass out of the blood-stream, picking up bacteria and reentering the radicals of the portal vein.

Adami has demonstrated that the sterility of the upper intestinal tract is due to both the intestinal secretions and these phagocytes. The ability of the liver to reproduce itself after removal of a large portion of it, is marvelous.

Mann has demonstrated that after removal of seventy per cent of the liver of a dog, it will be replaced within twelve weeks, not only by hypertrophy but by hyperplasia of the remaining cells. In contrast to the above function, it will undergo complete fatty degeneration within forty-eight hours, should it be overwhelmed by an acute destructive poison, either bacterial or chemical.

It could not be anticipated that the application of one test would be an accurate indication of the degree to which these various functions may be impaired. Certainly it is reasonable to assume that one function could be destroyed while another would not even be impaired.

*Read before the Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

However, at the present time the tests of liver function that are being tried promise to give at least some evidence that one or more of its functions are impaired.

It is known that a dye, phenolphthalein is excreted almost, if not entirely, by the normal liver. By comparing the rate of this excretion an estimation of liver function is determined. Two methods of making this estimate are used at the present time.

First, the dye is injected into the bloodstream and its elimination in the bile is estimated. The estimation was first made by a study of the bile in the feces. This, of course, was very unsatisfactory, but since the advent of the duodenal tube, a much more satisfactory method of securing the bile has given considerable impetus to this method of estimating liver function. In this method two criteria may be used, the time of appearance of the dye in the bile and also the total amount of the dye excreted in a given length of time.

The great difficulty of knowing the amount of bile secreted that you are able to recover with the tube seems to me would very materially invalidate the accuracy of this estimation, especially so far as the total amount excreted is concerned.

Second, the same dye is given intravenously and an estimation of the time required for all the dye to be removed from the bloodstream. This method appeals to me as probably the most accurate and the one that bids fair to supplant all other methods that have been employed up to the present time. This latter method has been rather intensely studied by Rosenthal, hence it has come to bear his name. When there is disturbance of function so far as excretion of the dye is concerned, we do not yet know whether one or all of the liver functions are disturbed, and if only one, which one. Probably the degree of impaired function can be quite accurately estimated for the dye, but whether it will be accurate for the other functions, it remains for fur-

ther study to determine. Rosenthal has estimated its value upon a small number of cases and it has proven of sufficient value to justify continued study and observation.

Whether a determination of impaired function is going to be of value from the standpoint of affording relief to the patient is yet to be determined. However, we can only hope it will ultimately afford a means by which some relief may be obtained. Diseases of the liver that are associated with jaundice have recently been studied and by a determination of the type of jaundice, an estimation of liver function has been made.

Two types of jaundice are recognized, the one where all constituents of the bile are found in the blood is termed colemia; the other called by the French disassociated icterus, when only bilirubin circulates in the blood and all other constituents are absent, termed bilirubinemia.

Hymans Van der Bergh has succeeded in distinguishing two kinds of jaundice by a simple chemical test. I shall not mention any details regarding any test, but it is certainly interesting as well as instructive to know that you can readily and accurately distinguish icterus that is due to some form of obstruction to the bile passages. Also that you can as surely know the icterus is produced by an impairment in the liver cells, which prevents them from secreting a normal amount of bilirubin or that an increased production of pigments by the reticulo endothelial system obtains.

By these tests a latent jaundice can be detected. Latent jaundice is applied to instances where only a small quantity of bile or bilirubin is circulating in the blood, in amount not sufficient to produce coloring in the skin.

This latent icterus can help in clearing up cases of colic in which it is difficult to determine the origin. It requires about forty-eight hours for jaundice to appear where there is obstruction to the bile passages.

Roundtree, Walters and Greene, of the

Mayo Clinic, have demonstrated that when liver function is below twenty-five per cent, any operation will probably end fatally. A determination of liver function will help very materially in estimation of probable mortality incident to any operation.

When I begin to look especially into the subject of liver function I hoped to find something relating to the impairment of liver function as related to the diseased gall-bladder.

Practically nothing has been found except the work of Evotts Graham, which has shown a hepatitis always associated with the infected gall-bladder, but he has not shown how much this has influenced liver function.

W. J. Mayo speaks of "hepatic shock" occurring after very slight operations on patients with marked decompensating livers. It is well recognized that chronic infections regardless of location are capable of interference with any organ, but I should think an infected gall-bladder certainly impairs liver function in proportion to the activity of the infection and its duration.

It would appear that in the liver there is an exceedingly wide margin of safety or else we would be more frequently doomed. The salvation of liver function in gall-bladder cases is early removal of the gall-bladder.

DISCUSSION.

DR. E. T. NEWELL, Chattanooga: This is a live subject and one that we should know more about, especially when we think of the very badly jaundiced and infected cases, where there is stone in the common duct. I do not know of any class of cases where the very test that Dr. Caldwell has brought out is of more value in telling you whether the patient can stand an operation than in just those "water-logged" cases. I have in mind two or three cases seen in the last few years in which the patient had stone in the common duct, stone in the gall-bladder and stones in the hepatic duct. In all these cases, as you know, in spite of the fact that you prepare them as well as you can for operation, those cases carry a high mortality. I am not familiar with some of the tests brought out by Dr. Caldwell and hope he will give us more information. If you steer away from the rock you get into the whirlpool, and if

you steer away from the whirlpool, you get into the rock, in most of these cases. If you leave these patients alone, they are sure to die. I know Dr. Mann, of the Mayo Clinic, has brought out the fact that if sugar is entirely eliminated from an animal he cannot live for any length of time. He has made other valuable observations on the removal of parts of the liver of an animal.

I am glad to have heard the paper and hope there will be further discussion of same.

DR. WILLIAM LITTERER, Nashville: I have not been doing any work along the line of liver function. I have a younger brother, Dr. Buist Litterer, who is pathologist to the St. Thomas Hospital, who has had a number of cases, I think about twenty-five altogether, with other private cases, and he has taken up the Rosenthal method of testing these cases out. Personally I am more or less drifting in the line of public health work and have not worked this out, but I think there is a great future for it. Rosenthal, by the way, is a graduate of Vanderbilt and he went to Johns Hopkins and worked this out doing laboratory and chemical work there. He also has a newer method which my brother is working on. Several dyes can be used, but he thinks the new method is far more effective. He has not published his method, but my brother is working on it and it certainly promises a wonderful future. When we collect more data there may be a time when there will be no special surgical risk, and in cases where the individual has a liver function that is 25 per cent off, surgical interference will not be undertaken.

DR. J. B. McELROY, Memphis: The subject which the doctor has presented is of very great interest. My experience leads me to say that we will not find any one liver test that will give us all the information we desire. I think we can use different ones, including that Dr. Caldwell has mentioned. My experience has been more with the galactose and levulose, testing the coagulation time of the blood, urobilin in the urine, and Weidel proteopexic test.

An interesting feature of the paper was the discussion of the different types of jaundice which we encounter. While Hijman's and van den Berg have advanced our knowledge particularly in this regard, I think there are many things in these cases which we can see with the eye, such as the presence of bile in the stool and absence of bile in the urine, among others which help us to determine whether it is obstructional or functional jaundice. A probably easier test than the Hijman's or van den Berg is that of Herzfeld, which is described in Deutches Archives fur Klin. Med. of a year or two ago.

DR. ROBERT CALDWELL, Nashville (closing): I had not hoped to bring anything definite on this subject to the attention of the Society, but wished to call attention to it. It certainly seems to me that ultimately it will be a very important factor in the practice of medicine and

surgery. At present I do not think any of the tests have proved much. I do not think the excretion of one dye will tell us whether we have disturbance of one or more functions of the liver. I think that ultimately if we get something practical regarding the liver we will have to know something more about its function. It seems strange that we have gone so along without detailed study of as important an organ as the liver. Of course, the most important side of the problem probably will be worked out in relation to the inflammatory conditions of the gall-bladder, and that we hope we will be able to do at some time. A very sick patient with empyema

of the gall-bladder who came in at the end of two weeks after operation. She had no infection. She lived for four or six days and finally died of what I thought was impaired liver function. She was cold and clammy. What can be done to put such a patient in better shape? We do not know now, but probably we will find out what can be done. Whether it will be feeding them more sugar for a few days, as Mann has shown in experimental work in which he has removed the liver and then revived the animal for several days by feeding glucose, I do not know. I think the subject is very important and wished to call the attention of the Association to it.

OSTEOMYELITIS*

By Henry G. Hill, M.D., Memphis

AFTER a review of the literature on osteomyelitis I was impressed with the division of opinions relative to the treatment in the acute as well as in the chronic stages of the disease. Demand for operation in acute osteomyelitis, before subperiosteal abscess develops, is sometimes hard to meet in practice. The difficulty of diagnosis and accurately locating the process in the early stage, in a limited

number of cases, makes the indication for operation very uncertain. There are some cases in which it is absolutely impossible to localize the process during the first twenty-four or thirty-six hours after onset. The diagnosis should be made before swelling in the soft parts occurs. During this period x-ray examinations are negative. Superficial palpation in the region of pain usually reveals no tenderness, while prolonged



First of series of roentgenograms (three days after onset) case of osteomyelitis—showing no evidence of the disease.



Second of series (seven days after onset) no roentgenological signs at this time.

deep pressure directly over the lesion will develop severe pain. This is the essential sign in the early stage of acute osteomyelitis.

The disease usually occurs in children and young adults. The extremities of bones near the joint are most frequently involved.

The femur is the site of trouble in fifty per cent of cases, tibia in thirty-three and one-third; although any bone may be attacked. In some cases the source of infection can be traced to tonsilitis, influenza, boils, carbuncles, bronchitis, local skin infections, etc. Thirty-three and one-third per cent will give a definite history of trauma. Constitutional symptoms, sudden intense pain,

*Read before the Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

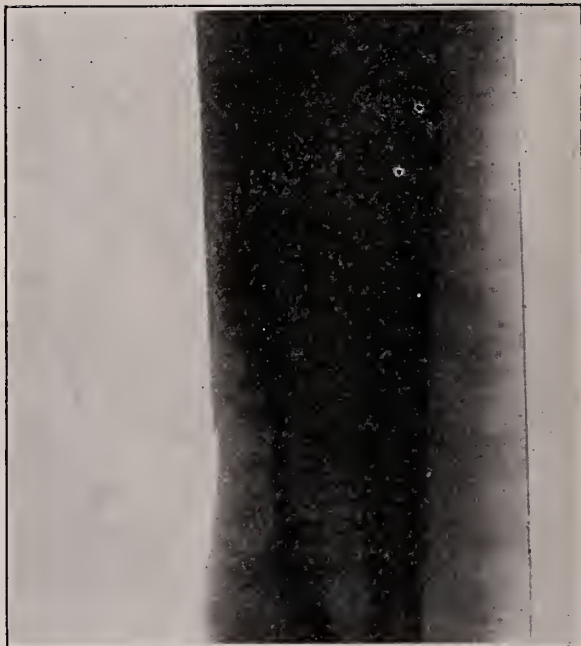
chill, high temperature, increase in leukocytes, are very striking in acute osteomyelitis. The physician is at once aware that his patient is extremely ill. The death rate ranges between twenty and forty per cent when a diagnosis is not made and

proper treatment instituted. Royal Whitman reported a series of neglected cases, in which the joint was involved, with death rate of sixty per cent.

Some of the writers advise radical surgery in all cases of osteomyelitis, but I have seen numerous cases when it would have



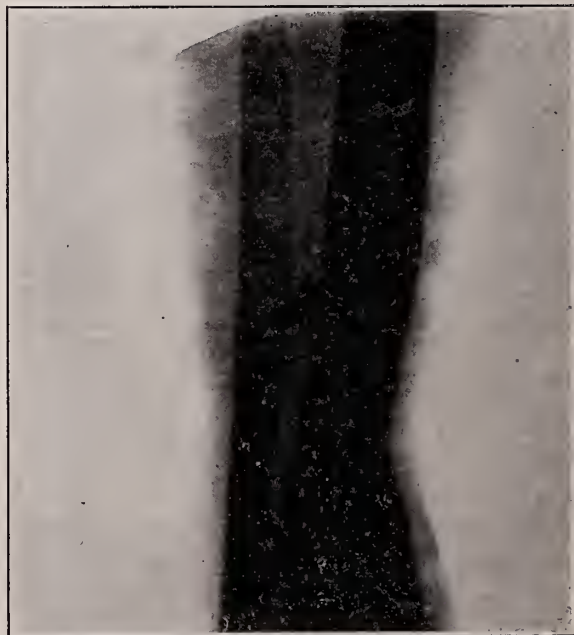
Third of series (five and one-half weeks after onset) showing complete sequestration of entire diaphysis of tibia.



Fourth of series (ten weeks after removal of entire diaphysis of tibia) showing regeneration of bone.



Fifth of series (five months after operation) showing further regeneration.



Sixth of series (four and one-half years after removal of entire diaphysis of tibia) showing complete regeneration.

been possible to do a most complete operation, but I was unwilling to take a chance on losing my patient. In profoundly toxic cases it is much better to make a skin in-

cision over the tender area, under gas or light ether anesthesia, quickly separate the periosteum from the cortex; this is usually done with ease when the periosteal incision is directly over the disease process in the marrow canal. The cortex should be punctured in several places if pus is not seen at once when the canal is opened. On opening the medullary cavity the surgeon should be very careful not to destroy any more medullary tissue than is absolutely essential. The practice of recklessly curetting the marrow canal in acute osteomyelitis

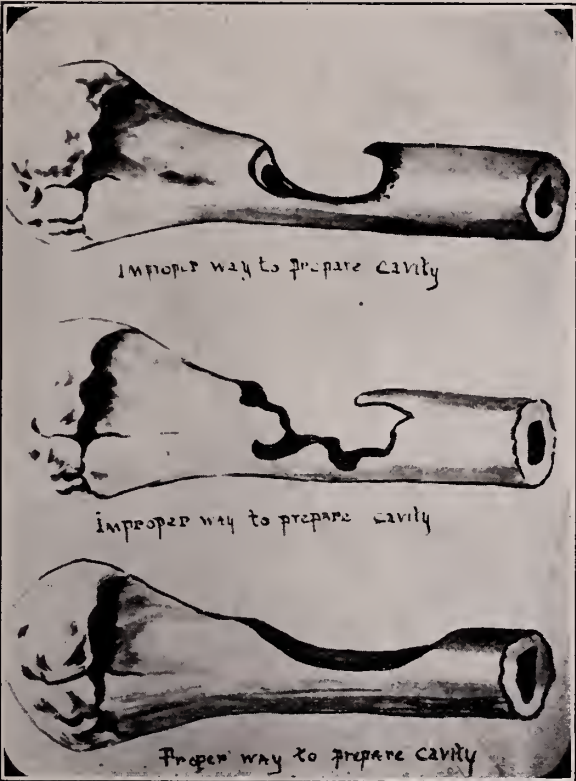


Fig. 1—Results four and one-half years after removal of entire diaphysis left tibia. Good functional tibia. (Case 1.)



Fig 2—Front view showing maximum deformity (Case 1).

cannot be condemned too vigorously. The disease in early stages is a cellulitis and the object of an operation is to preserve and not to destroy tissue. Free drainage is important, but one must always be mindful of the role that the medullary tissue plays in the economy of bone, the vitality of which is entirely dependent upon the periosteum and marrow. It is a well established fact that cortical bone does not perish until these structures are separated from it. The friability and ease with which the medullary tissue may be removed are no criteria of its importance any more than the same qualities would indicate the importance of the cerebral tissue. A rubber tube or cigarette drain should be inserted when an incision is made through soft tissue of considerable thickness. The operation should be done in fifteen or twenty minutes. Patient usually reacts quickly. Thirty-five to fifty per cent recover without secondary sequestrotomy, when drainage is established before subperiosteal abscesses occur. Profound anesthesia or prolonged operation increases the post-operative death rate in acute septic osteomyelitis. Fifty to sixty-five per cent of cases require secondary operation regardless of the nature of primary treatment. Our

records show a mortality rate of two per cent, which is very gratifying. A review of the literature revealed a reported death rate of fifteen to thirty per cent. In ninety per cent of my cases, subperiosteal abscesses had formed, and free pus was found in the soft tissues in many.

Joints should never be opened unless there is positive evidence that the process has spread to the cavity; this has been done, I am sure, in some instances. Osteomyelitis most frequently begins in the extremity of the long bones near the joint cavity, but the process seldom extends into it. The spread of infection by incision through the capsule usually means a total or partial loss of joint function.

CHRONIC OSTEOMYELITIS.

Chronic osteomyelitis usually follows the acute. Incomplete operations rarely cure. The treatment consists of a thorough removal of all infected tissues, proper preparation of the cavity, complete obliteration of dead space, secure post-operative immobilization and scrupulous operative technique. Drainage tubes should not be used. Irrigation of the wound with Dakin's and other germicidal solutions is seldom indicated. All sinuses should be accurately mapped out from X-ray study before operative preparation has been instituted. The skin should be carefully prepared on the



Fig. 3—Five months after removal of entire shaft of right tibia (Case 2).



Fig. 4—Front view (Case 2).

day before operation, by removing all crusts, closely shaving a wide area, thoroughly cleansing skin with benzine, carefully drying and applying five per cent tincture iodine, covered with sterile dressing. Immediately before operation again prepare the field with alcohol and iodine equal parts. Old sinuses and infected soft

tissue should be dissected and removed en masse, provided same can be done without functional damage. All sequestra and the walls of the involucrum should be removed. Spines and free pieces of bone should not be left in the cavity. The cavity should be prepared with the same care that a dentist prepares a tooth cavity. It should be swabbed with carbolic acid, followed in two or three minutes with alcohol and iodine, equal parts. Bleeding from the



Fig. 5—Suitable ambulatory brace to prevent deformity (Case 2).



Fig. 6—Osteomyelitis; all cervical vertebrae involved (eight months' duration) following suppurative frontal sinusitis (Case 3).

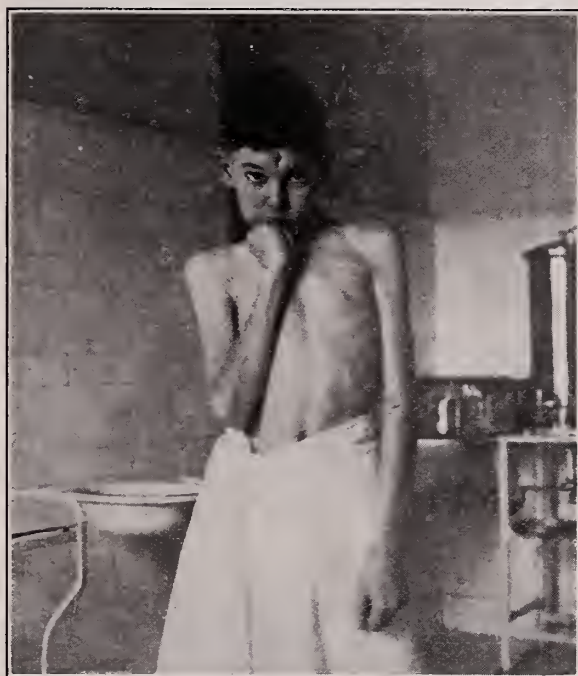


Fig. 7—Front view (Case 3).



Fig. 8—After three months' treatment with extension and bracing. Deformity almost corrected (Case 3).

bone can be controlled by free use of hot water and pressure. The cavity should be completely obliterated with muscular or facial flaps, bleeding points ligated with absorbable ligatures, the soft parts approximated and the wound closed with the fewest number of loosely tied sutures. Strict instrumental technique should be carried out.

We hope that the amputation specialist



Fig. 9—Front view (Case 3).

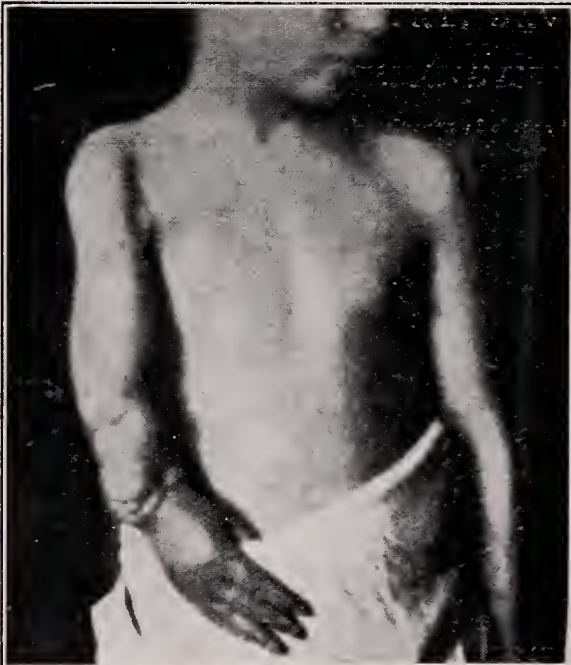


Fig. 10—Deformity following neglected osteomyelitis right forearm.

has profited by his errors, for many limbs have been uselessly sacrificed in the past. Mutilating operations have been reduced to a minimum; still it might be wise for a hospital to require consultation before allowing any surgeon to amputate a leg or arm. Four years ago I saw a boy who had undergone an amputation of both arms and one leg for osteomyelitis, a shocking spectacle. His condition was thought to be tubercular. Tubercular osteomyelitis is extremely rare and usually secondary.

Shock and acidosis, seen in a certain per cent of postoperative cases of osteomyelitis are in a measure preventable. Vaccinotherapy is indicated in a limited number of cases of chronic osteomyelitis.

There is nothing new or revolutionary pertaining to the diagnosis or treatment of osteomyelitis, still there seems to be a lack of general knowledge of the symptoms as well as the treatment of the disease.

CONCLUSION.

I think it is well to call attention to some of the common errors made in the diagno-



Fig. 11—Loss of growth following osteomyelitis of the tibia (Whitman).

sis and treatment of osteomyelitis.

First. The diagnosis should be made earlier.

Second. Many cases of chronic osteomyelitis are confused with tuberculosis of the bone.

Third. An opening through the cortex into the marrow canal and through the opposite side of the cortex, so called through and through drainage, producing a condition, which, as a rule, will not heal. Failure to flatten out the bone and properly prepare the cavity.

Fourth. Incisions carried through the capsule of a joint, causing a spread of infection.

Fifth. Too little consideration of a patient's condition might occasionally be charged to the surgeon. In a limited number of chronic cases the surgeon is apt to become disinterested in the orthopedic phase of the long-drawn-out after-care, bracing, etc.

Sixth. The surgeon might be misled by negative x-ray findings in the early stages of acute osteomyelitis, in my experience this being the most common error in the diagnosis of the disease. Watchful waiting usually means the death of a large portion or entire diaphysis of the infected bone.

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THE JOURNAL

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J. F. GALLAGHER, M.D. -----Editor

R. C. DERIVAUX, M.D. -----Associate Editor

JULY, 1925

EDITORIAL

AN APOLOGY

By what seems to be gross negligence on the part of the linotype operator the "news notes" and "deaths" which were to appear in this issue have been lost. In as much as no duplicate is kept of the copy of this matter which is sent to the printer it will be necessary for the Journal to appear without these items. Since it seems that these departments are the most interesting to the readers of the Journal an explanation and an apology is deemed neccessary.

THE MEMBERSHIP NUMBER

This issue of the Journal contains a list of the Officers and Standing Committees as appointed by the President and a list of the membership by counties as of record in this office July 21st. The officers of the various component societies were indicated when they had been reported.

The secretary has frequent requests for membership lists of the State Society and inasmuch as the number of copies of the Journal are limited, it is urged that the members preserve this issue even though other issues be carelessly put aside.

MEDICAL SOCIETIES

DALLAS WILL ENTERTAIN THE SOUTHERN MEDICAL ASSOCIATION IN NOVEMBER.

A warm invitation is being extended to the doctors of the South to attend the annual meeting this fall, and preparations

are being made to entertain between four and five thousand. Already 1,500 rooms in the best hotels have been set aside for this purpose, and it is estimated that more will be available.

Dallas has all the chief requirements for a successful convention city, ample hotels and auditoriums, easy accessibility, facilities for entertainment and diversion, coupled with whole-hearted hospitality on the part of the citizenship. It is not only a medical center of importance, but a city of interest and opportunity.

EASILY ACCESSIBLE

Ten trunk line steam railroads serve Dallas, with 100 passenger trains daily in and out of the \$6,500,000 Union Terminal Station. Two hundred and fifty-eight interurban trains leave the \$1,000,000 electric interurban station daily. Dallas is sixteen hours by rail from Kansas City, eighteen hours from St. Louis, twenty-seven hours from Chicago or Cincinnati, and forty-three hours to New York.

For those who wish to use the automobile in attending the S. M. A. convention Dallas is located on five transcontinental highways, Bankhead, Meridian, King of Trails, Dallas-Canadian-Denver, and the Dixie Overland. These highway organizations assure the tourist of well-kept roads. In Dallas County alone are 1,000 miles of surfaced highways, and a tourist camp and centers of highway information are available also.

CLUBS, RESTAURANTS, THEATRICAL FACILITIES.

Dallas has a number of strong clubs, splendidly housed, such as the Dallas Athletic Club, University Club, City Club, a number of fine golf clubs, and all the leading national service organizations, such as Rotary, Lions, Kiwanis are represented here—all are most hospitable in the entertainment of visitors.

Restaurants, either connected with hotels or independent, are numerous and of a generally high standard. Some of the highest priced chefs in the nation are here. You can get meals with a

Western flavor, Mexican dishes, Chinese dishes or old-fashioned Southern cooking. All the year truck gardens and farms are producing in some parts of Texas, and this, coupled with proximity to packing houses, poultry farms and orchards, tends to keep food prices reasonable.

Dallas has thirty-seven theaters, with a combined seating capacity of 28,000. These include summer and winter stock companies, many good road shows during the season, high class vaudeville and motion picture houses, and the Little Theater, which was twice awarded the Belasco prize. There are theaters costing as much as \$2,000,000 and seating as many as 3,000 persons.

CLIMATIC CONDITIONS.

Dallas' climate as a whole is pleasant and invigorating, without severe extremes, and November in Texas as a rule is crisp and clear, ideal for travel and for outdoor sports.

Through the medium of this Journal, in the later issues, data on the hospital and clinical facilities of the convention city will be given, meanwhile the medical profession of Dallas and of Texas invites you to plan to attend the Southern Medical Convention this fall.

CURTICE ROSSER, M.D.,

For the Publicity Committee.

MISCELLANEOUS

COAGULATION OF THE BLOOD.

One of the most important tests applied to the blood by the practicing physician is the determination of the time necessary for coagulation. Such tests are important before all operative procedures involving the cutting of blood vessels, and also in women before the birth of a child. The method of making such determinations varies from simple observation of a drop of blood on a glass slide to the use of complicated and intricate devices that have been elaborated particularly for the purpose. Dr. O. S. Gibbs*, of the department of pharmacology in the University of Edinburgh, recently developed a method involving the use of a broken loop of platinum wire, the coagulation time being that in which a small drop of blood placed on the loop ceases to move when the loop is rotated. He has now extended his observations with this device, comparing its use with that of other apparatus for the purpose. In all devices in which contact of the blood with the instrument is reduced to a minimum, Dr. Gibbs finds, not only the area of contact, but also the nature of the material coming into contact with the blood causes a variation in the end-point of coagulation. Comparisons were made in the use of loops of wire made of tungsten, platinum, nickel and copper plated platinum. It was found that the slightest tarnishing tends to shorten the coagulation time, and that coating the wire with collodion brings the clotting time back to normal. Again, temperature and the humidity of the room seem to have a definite effect. Furthermore, slight traces of such volatile bodies as ether, chloroform, xylene or volatile oils may have a marked delaying effect on the clotting time. It becomes, of course, possible to deduct for the variations in the method when a given test is used over a long period of time. Dr. Gibbs concludes that the time of coagulation of a drop of human blood obtained by pricking varies with the area of contact with foreign material, with the nature of the material and with the temperature. When blood is obtained by any other method, as by the use of a cannula, or by pricking an ear vein, the coagulation time is inconstant. It is his belief that such methods give no certain indication of the degree to which hemorrhage is prevented by hemostatic remedies in the body when small blood vessels are severed, since the effect of the tissue products on clotting is eliminated to a varying extent by the methods employed. As will be readily perceived, this work is important not only for its direct practical application to human surgery, but also as a guide in the estimation of the value of all various alleged hemostatic substances.—

Jour. A. M. A., May 23, 1925.

*Gibbs, O. S.: Clinical Blood Coagulometer, Quart. J. Med. 17:312 (April), 1924; Measurement of the Blood Coagulation Time, J. Physiol. 59:426 (March 31), 1925.

RHEUMATISM.

W. G. MacCallum, Baltimore (Journal A. M. A., May 23, 1925), says that great confusion has prevailed in the use of the term rheumatism, since it has been applied to all sorts of painful affections of the joints and even to more indefinite muscular pains. Rheumatism is an infectious disease that occurs in children or in young adults, sometimes with a very acute course, more often progressing slowly with several explosions of acute illness in which different symptoms may become especially prominent. It may subside and leave the patient in a state of apparent well being, but it usually produces permanent changes in the heart, which disable it to some extent and predispose it to secondary infections, which distort it still further and may lead to death. Other affections that might possibly be confused with rheumatism stands out sharply distinct. If attention is centered on the joint affection, it is soon realized that, although excessively painful, the changes in the joints in rheumatism differ from all the others in affecting especially the periarticular tissues and not being destructive. No bacteria have been found constantly present in the joint fluid, and the pain disappears after a time, leaving the joint almost unchanged from normal. In reality, the joint affections in rheumatism are only an incident in a serious disease and are temporary, producing no such grave anatomic changes as are found in other similar diseases. Rheumatism as a disease of childhood runs a somewhat different course from that seen in adult life, in that some of the typical features are more pronounced, while others, such as the joint pains and the sweats, may never even appear. MacCallum reviews in detail the clinical history of the disease and discusses the joint lesions, the heart and blood vessel involvement, and specific and peculiar lesions. As to the cause of the disease, MacCallum says: "It seems certain that rheumatism is caused by a specific infectious agent of some peculiar kind, not recognizable by our present methods of study and not as yet found to be transferable to laboratory animals. The constancy and peculiarity of the characteristic lesion makes it seem very improbable that any of the numerous forms of bacteria that have been isolated from such cases can have a true etiologic relation to the disease."

BOOKS RECEIVED

PHYSICAL DIAGNOSIS OF DISEASES OF THE CHEST. By Joseph H. Pratt, A.M., M.D., and George E. Bushnell, Ph.D., M.D. Octavo of 522 pages with 166 illustrations. Philadelphia and London: W. B. Saunders Company, 1925. Cloth, \$5.00 net.

Who would guess that the profession needs another treatise on physical diagnosis. But along comes Joseph H. Pratt, A.M., M.D., and George E. Bushnell, Ph.D., M.D.—apparently from the wide open spaces, for there is nothing to be found in the volume to indicate from whence they came nor why—with a tome on the topics indicated in the title. The following opening sentence in the

preface is probably the excuse for its publication: "This treatise has been written in the hope of utilizing the experience gained in the instruction of medical officers in physical diagnosis at the medical reserve officers' camp during the late war. It was found in this work that many physicians who have paid no especial attention to physical diagnosis, if given proper instruction, become interested in the subject and develop a previously unsuspected facility." Then follows a series of platitudes never before seen in regard to study and instruction. There is nothing new or original in the text and its publication just adds one more book to a field that is already well and perhaps better covered. While the authors conceal their identity and habitat, the egotism and patronizing air savors strongly of Boston.

J. F. G.

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 Fre're, J. M.-----707 Walnut St., Chattanooga
 Funderbunk, N. A.-----

-----Pine Breeze Sanitarium, Chattanooga
 Gilbert, E. A.-----Provident Bldg., Chattanooga
 Goodloe, A. E.-----James Bldg., Chattanooga
 Gurney, C. H.-----Rossville, Ga.
 Hampton, H. H.-----Hogshead Apt., Chattanooga
 Haskins, J. B.-----Volunteer Bldg., Chattanooga
 Haymoore, G. P.-----Hogshead Apt., Chattanooga
 Hillas, W. J.-----Volunteer Bldg., Chattanooga
 Hogshead, J. McChesney-----

-----Hogshead Apt., Chattanooga
 Holman, J. H.-----Elizabeth Apt., Chattanooga
 Holtzclaw, Cooper-----213 East 8th St., Chattanooga
 Hysinger, P. R.-----314 Wilder St., Chattanooga
 Jacobs, B. L.-----Provident Bldg., Chattanooga
 Johnson, J. L.-----Volunteer Bldg., Chattanooga

Johnson, J. P.-----Volunteer Bldg., Chattanooga
 Johnson, J. W.-----Volunteer Bldg., Chattanooga
 Johnson, O. H.-----James Bldg., Chattanooga
 Kirkpatrick, J. W.-----Richard City, Tenn.
 Larimore, H. P.-----Volunteer Bldg., Chattanooga
 Laws, H. A.-----Provident Bldg., Chattanooga
 Lawwill, Stewart-----Provident Bldg., Chattanooga
 Lindsay, W. E.-----Hogshead Apt., Chattanooga
 Long, S. H.-----Volunteer Bldg., Chattanooga
 Macquillan, J. W.-----

-----Hamilton Bank Bldg., Chattanooga
 Magee, E. H.-----Provident Bldg., Chattanooga
 Marchbanks, S. S.-----Volunteer Bldg., Chattanooga
 Martinson, M. M.-----412 Cheny St., Chattanooga
 Martinson, S. C.-----412 Cheny St., Chattanooga
 McGhee, J. B.-----224 ½ Main St., Chattanooga
 McIsaac, F. C.-----James Bldg., Chattanooga
 McPheeters, J. D. L.-----

-----Volunteer Bldg., Chattanooga
 Meacham, M. A. Hamilton Bk. Bldg., Chattanooga
 Moffitt, J. A.-----Van Deman Bldg., Chattanooga
 Nelson, J. E.-----Volunteer Bldg., Chattanooga
 Newell, E. D.-----707 Walnut St., Chattanooga
 Newell, E. T.-----707 Walnut St., Chattanooga
 Orr, W. M.-----Alton Park, Chattanooga
 Patterson, A. M. Erlanger Hospital, Chattanooga
 Patton, E. W.-----Hamilton Bk. Bldg., Chattanooga
 Purcell, H. M.-----Hogshead Apt., Chattanooga
 Reisman, E. E.-----Provident Bldg., Chattanooga
 Renner, Herbert-----Volunteer Bldg., Chattanooga
 Revington, J. H.-----Volunteer Bldg., Chattanooga
 Roberts, G. M.-----Volunteer Bldg., Chattanooga
 Shumacker, L.-----709 Walnut St., Chattanooga
 Skelton, C. A.-----Volunteer Bldg., Chattanooga
 Smith, H. F.-----224 ½ East Main St., Chattanooga
 Smith, J. A.-----908 Oak St., Chattanooga
 Stapp, F. B.-----9 ½ East 8th St., Chattanooga
 Steele, J. B.-----Volunteer Bldg., Chattanooga
 Steele, Williard-----Provident Bldg., Chattanooga
 Stem, L. T. (President)-----

-----Volunteer Bldg., Chattanooga
 Taylor, J. H.-----Hamilton Bk. Bldg., Chattanooga
 Thomison, W. A.-----Dayton, Tenn.
 Vaden, W. E.-----Hamilton Bk. Bldg., Chattanooga
 Wallace, Raymond-----Provident Bldg., Chattanooga
 Webb, J. M.-----Ooltewah, Tenn.
 Wert, B. S.-----Provident Bldg., Chattanooga
 West, G. B.-----Volunteer Bldg., Chattanooga
 West, L. B.-----Volunteer Bldg., Chattanooga
 Willbanks, G. H.-----Rossville, Ga.
 Williams, D. M.-----Volunteer Bldg., Chattanooga
 Williams, G. V.-----Van Deman Bldg., Chattanooga
 Winter, W. J.-----Volunteer Bldg., Chattanooga
 Wise, E. B.-----James Bldg., Chattanooga
 Wood, S. H.-----St. Elmo, Tenn.
 Wunchow, O. B. First Nat. Bk. Bldg., Chattanooga
 Yarnell, S. I.-----112 ½ East 7th St., Chattanooga

HAMBLEN COUNTY.

Brock, P. L.-----Morristown
 Campbell, J. F.-----Morristown
 Carroll, C. T. (Secretary)-----Morristown
 Henderson, P. L.-----Morristown
 Howell, Wm. E.-----Morristown
 Idol, J. H.-----Tate
 Koger, E. B.-----Morristown
 Milligan, L. H.-----Morristown
 Painter, F. F.-----Morristown
 Pangle, H. G.-----Russellville
 Pierce, J. W.-----Tate
 Ruble, W. G. (President)-----Morristown
 Ryburn, S. M.-----Morristown
 Shields, D. E.-----Morristown
 Smithers, G. W.-----Rutledge
 Tomlinson, O. R.-----Tate Springs

HARDEMAN COUNTY.

Alexander, J. Y.-----Middleton
 Cocke, E. W.-----Bolivar

Miesch, L. A.-----Bolivar
 Pope, L.-----Hickory Valley
 Timmons, E. R. (Secretary)-----Grand Junction
 White, A. W.-----Whiteville

HARDIN COUNTY.

Williams, O. H.-----Savannah

HAWKINS COUNTY.

Doty, R. A.-----Rogersville
 Lyons, J. S. (Secretary)-----Rogersville
 Miller, J. E.-----Rogersville
 Patton, E. A. (President)-----Pressmen Home
 Swaney, O. M.-----Treadway

HENDERSON COUNTY.

Arnold, J. M.-----Lexington
 Bolen, C. E.-----Wildersville
 Boyd, M. P.-----Yuma
 Bradfield, D. W.-----Wildersville
 Brandon, G. A. (President)-----Lexington
 Brazelton, S. H.-----Sardis
 England, J. H.-----Luray
 Goff, J. F.-----Chesterfield
 Huntsman, W. F.-----Lexington
 Johnson, C. H.-----Lexington
 Joyce, J. P.-----Lexington
 Keeton, J. T.-----Saltillo
 Milam, R. H.-----Lexington
 Parker, S. T.-----Lexington
 Powers, J. E. (Secretary)-----Lexington
 Watson, W. T.-----Lexington
 Wylie, R. L.-----Scotts Hill

HENRY COUNTY.

Abernathy, G. T.-----Paris
 Burrus, Swan-----Paris
 Freeman, J. T.-----Paris
 McSwain, George-----Paris
 McSwain, J. H.-----Paris
 Oliver, A. A.-----Paris
 Perry, R. J. (President)-----Springville
 Plotkin, Edward-----Linden
 Wiggins, M. C.-----Paris
 Witherington, R. L. (Secretary)-----Paris

HICKMAN COUNTY.

Beasley, John S.-----Centreville
 Cagle, W. D.-----Loberville
 Edwards, W. K. (Secretary)-----Centreville
 Pickard, J. H.-----Hohenwald
 Stephenson, C. V.-----Centreville
 Webb, J. B. (President)-----Goodrich

JACKSON COUNTY.

Anderson, R. L. (President)-----Gainsboro
 Gaw, R. C. (Secretary)-----Gainsboro
 McCain, N. M.-----Gainsboro
 Quarles, J. D.-----Whitleyville

JEFFERSON COUNTY.

Caldwell, T. A.-----Jefferson City
 Cline, B. E.-----Strawberry Plains
 Doane, N. T.-----New Market
 Dukes, N. M.-----Strawberry Plains
 Larr, H. L.-----Jefferson City
 Taylor, W. H. (President)-----New Market
 Tinsley, P. A.-----Dandridge
 Tittsworth, B. M. (Secretary)-----Jefferson City
 Walker, J. H.-----White Pine

KNOX COUNTY.

Abercrombie, Eugene-----Acuff Bldg., Knoxville
 Acuff, Herbert-----Acuff Bldg., Knoxville
 Alexander, Eben-----Holston Bk. Bldg., Knoxville
 Austin, W. S.-----W. Church St., Knoxville
 Barbee, John T.-----Medical Bldg., Knoxville
 Barry, Tom R.-----Medical Bldg., Knoxville
 Black, M. L.-----Holston Bk. Bldg., Knoxville
 Blalock, L. O.-----Empire Bldg., Knoxville

Boies, Wm. A.-----W. Church St., Knoxville
 Bolen, H. J.-----Mascot, Tenn.
 Bosworth, B. D.-----Empire Bldg., Knoxville
 Bowen, W. M.-----Holston Bank Bldg., Knoxville
 Carmichael, C. J.-----Walnut St., Knoxville
 Carroll, H. L.-----Medical Bldg., Knoxville
 Casenburg, F. S.-----Medical Bldg., Knoxville
 Casenburg, W. G.-----Medical Bldg., Knoxville
 Cates, B. B.-----W. Clinch Ave., Knoxville
 Catlett, W. A.-----Holston Bk. Bldg., Knoxville
 Christenberry, H. E.-----W. Church St., Knoxville
 Christenberry, W. F.-----Lonsdale, Knoxville
 Cochran, W. R.-----Walnut St., Knoxville
 Copenhaver, K. C.-----Medical Bldg., Knoxville
 Copenhaver, M. M.-----Medical Bldg., Knoxville
 Cunningham, H. K.-----W. Church St., Knoxville
 Dail, V. C.-----Holston Bk. Bldg., Knoxville
 Deadrick, Chalmers-----2420 E. 5th St., Knoxville
 Dearmond, C. C.-----Empire Bldg., Knoxville
 Delpuch, Wm.-----McGhee St., Knoxville
 Depue, R. V.-----W. Church St., Knoxville
 DeSautelle, W. T.-----Holston Bk. Bldg., Knoxville
 Donahue, R. E.-----W. Clinch St., Knoxville
 Dorsey, W. F.-----Walnut St., Knoxville
 Drake, C. M.-----W. Clinch St., Knoxville
 Duggan, S. B.-----4322 Lyons View Pike, Knoxville
 Ellis, J. J.-----Empire Bldg., Knoxville
 Fitzgerald, T. F.-----R. F. D. 8, Knoxville
 Ford, Earl C.-----Petros, Tenn.
 Ford, E. H.-----Holston Bk. Bldg., Knoxville
 Gambell, P. J.-----Kingston Pike, Knoxville
 Garrison, A. R.-----Byington, Tenn.
 Gillespie, S. B.-----Empire Bldg., Knoxville
 Goetz, H. E.-----Medical Bldg., Knoxville
 Greer, J. J.-----Walnut St., Knoxville
 Greer, W. A.-----Holston Bank Bldg., Knoxville
 Guynes, E. A.-----Medical Bldg., Knoxville
 Harrison, B. I.-----Market St., Knoxville
 Haun, Louis A.-----Holstein Bank Bldg., Knoxville
 Henderson, J. D.-----Holston Bank Bldg., Knoxville
 Henderson, J. V.-----Holston Bank Bldg., Knoxville
 Herrell, M. G.-----Powell Station, Tenn.
 Hill, Jesse C. (Secretary)-----
 -----4323 Lyons View Pike, Knoxville
 Hill, O. W.-----W. Church St., Knoxville
 Hodge, S. H.-----Walnut St., Knoxville
 Holloway, V. D.-----Walnut St., Knoxville
 Howard, B. V.-----W. Church St., Knoxville
 Jones, C. B.-----Holston Bank Bldg., Knoxville
 Jones, Thos. A. P. R.-----Walnut St., Knoxville
 Keeling, J. H.-----W. Church St., Knoxville
 Kelso, H. J.-----W. Church St., Knoxville
 Kennedy, J. M.-----728 N. Central St., Knoxville
 Kern, A. G.-----Walnut St., Knoxville
 Kincaid, J. H.-----W. Church St., Knoxville
 Kitts, H. L.-----Acuff Bldg., Knoxville
 Kyle, A. G.-----Walnut St., Knoxville
 Lane, V. C.-----Union Ave., Knoxville
 Layman, R. B.-----Medical Bldg., Knoxville
 Lea, J. Marshall-----Medical Bldg., Knoxville
 Leach, Robert S.-----W. Cumberland Ave., Knoxville
 Lee, M. H.-----Bearden, Tenn.
 Letellier, F. S.-----W. Church St., Knoxville
 Long, H. C.-----W. Church St., Knoxville
 Lucas, W. A.-----Acuff Bldg., Knoxville
 Luttrell, Walter-----Medical Bldg., Knoxville
 Lynn, W. N.-----Medical Bldg., Knoxville
 Lyons, J. S.-----Gay St., Knoxville
 Martin, Carl R.-----Fountain City, Tenn.
 McCammon, W. C.-----Arnstein Bldg., Knoxville
 McCampbell, H. H.-----Walnut St., Knoxville
 McClain, H. T.-----Gay St., Knoxville
 McClain, W. C.-----Gay St., Knoxville
 McCreary, C. F.-----Market St., Knoxville
 McCreary, R. F.-----Market St., Knoxville
 McDonald, DeWitt-----Gay St., Knoxville
 McIlwaine, Richard-----W. Church St., Knoxville
 McNabb, P. E.-----U. S. Army, Knoxville

McReynolds, R. L.---Holston Bk. Bldg., Knoxville
 Miner, S. K.---W. Church St., Knoxville
 Monger, Ralph---Acuff Bldg., Knoxville
 Nasn, W. S.---Walnut St., Knoxville
 Neu, J. B.---Fritz Bldg., Knoxville
 Newman, K. H.---Acuff Bldg., Knoxville
 Ogie, Beecher L.---Holston Bk. Bldg., Knoxville
 Oppenheimer, R. P.---W. Church St., Knoxville
 Parker, J. B.---Inskip, Tenn.
 Patterson, Reese---Acuff Bldg., Knoxville
 Patterson, Robert---Acuff Bldg., Knoxville
 Peters, H. L.---Gay St., Knoxville
 Peters, S. B.---Medical Bldg., Knoxville
 Phiegar, Robert---Washburn, Tenn.
 Potter, Wm. W.---Medical Bldg., Knoxville
 Rain, C. W.---Empire Bldg., Knoxville
 Reaves, Robert G.---W. Cumberland Ave., Knoxville
 Richards, W. D.---Arnstein Bldg., Knoxville
 Ristine, C. E.---Market St., Knoxville
 Roberts, M. S.---Medical Bldg., Knoxville
 Rodgers, Olin---Acuff Bldg., Knoxville
 Rule, A. L.---Medical Bldg., Knoxville
 Shedd, L. L.---Medical Bldg., Knoxville
 Shelton, W. A.---Acuff Bldg., Knoxville
 Smith, A.---Medical Bldg., Knoxville
 Smith, Joe T.---General Hospital, Kansas City, Mo.
 Smith, R. E. Lee---4322 Lyons View Pike, Knoxville
 Smith, V. I.---Holston Bk. Bldg., Knoxville
 Stone, G. W.---Hutson Bldg., Knoxville
 Swafford, J. B.---4322 Lyons View Pike, Knoxville
 Tadlock, A. D.---East 5th Ave., Knoxville
 Thielen, J. B.---Holston Bank Bldg., Knoxville
 Tillery, J. P.---Holston Bank Bldg., Knoxville
 Todd, R. G.---Gay St., Knoxville
 Trout, J. M.---U. S. Army, Knoxville
 VanDeGriff, J. M. J.---Fountain City, Tenn.
 Wallace, W. L.---N. Broadway, Knoxville
 West, J. Q. A.---Walnut St., Knoxville
 White, W. H. L.---Walnut St., Knoxville
 Wilhelm, Geo. T.---University Tenn., Knoxville
 Williams, D. H.---Walnut St., Knoxville
 Wood, E. G.---Medical Bldg., Knoxville
 Wood, R. B.---Medical Bldg., Knoxville
 Wood, W. P. (President)---Medical Bldg., Knoxville
 Wright, M. C.---Medical Bldg., Knoxville
 Young, R. M.---Walnut St., Knoxville
 Young, B. F.---Young Bldg., Knoxville
 Zemp, E. R.---Walnut St., Knoxville

LAKE COUNTY.

Alexander, J. D. (Secretary)---Tiptonville
 Alexander, W. S.---Ripley
 Crafton, J. A.---Phillips
 Griffin, R. B.---Ridgely
 Griffin, R. W.---Tiptonville
 Hollifield, J. Q.---U. S. Vet. Hosp., Kansas City
 Jones, J. A.---Wynnborg
 Kelty, E. T.---Tiptonville
 Summers, W. L.---Ridgely

LAUDERDALE COUNTY.

Chapman, S. T.---Halls
 Conyers, J. R.---Gates
 Dunnivant, J. L.---Henning
 Glenn, S. M.---Ripley, R. F. D. No. 7
 Hall, William---Halls, R. F. D. No. 3
 Lackey, J. B.---Ripley
 Lackey, J. H.---Ripley
 Lewis, J. R. (President)---Ripley
 Lusk, G. A.---Ripley
 Massengill, A. P.---Halls
 Miller, T. E.---Ripley, R. F. D. No. 1
 Pipkin, T. F.---Henning
 Sanford, B. R.---Henning
 Sanford, J. W.---Ripley
 Sanford, W. C.---Ripley
 Sanford, W. V. (Secretary)---Ripley

Walker, C. B.---Ripley, R. F. D. No. 1
 Wilson, R. B.---Gates

LAWRENCE COUNTY.

Cole, A. D.---Loretto
 Danley, J. W.---Lawrenceburg
 Ethridge, E. H.---Loretto
 Harris, L. C.---Lawrenceburg
 McAmis, T. A.---Lawrenceburg
 Neal, W. H. (President)---Lawrenceburg
 Stockard, T. J. (Secretary)---Lawrenceburg

LINCOLN COUNTY.

Anderson, J. M.---Fayetteville
 Blair, E. K.---Fayetteville
 Bryant, J. D.---Fayetteville, R. F. D. No. 8
 Cannon, W. F.---Fayetteville
 Farrow, J. R.---Fayetteville
 Galloway, H. K.---Mulberry
 Goodner, D. M.---Fayetteville
 Goodrich, C. L.---Fayetteville
 Graham, J. R.---Mulberry
 Griffin, A. L.---Eora
 Hardin, D. T. (Secretary)---Fayetteville
 Holland, E. F. (President)---Mulberry
 Maddox, J. W.---Blanche
 Patrick, T. A.---Fayetteville
 Shelton, J. M.---Kelso
 Sloan, J. E.---Petersburg, R. F. D. No. 2
 Wyatt, J. M.---Fayetteville
 Yearwood, A. L.---Fayetteville

LOUDON COUNTY.

Eblen, J. G. (Secretary)---Lenoir City
 Hall, G. M.---Lenoir City
 Hickman, T. J. (Secretary)---Lenoir City
 Leeper, J. T.---Lenoir City
 Padgett, W. D.---Lenoir City
 Robinson, Halbert---Loudon

MACON COUNTY.

Allen, M. A.---LaFayette
 Clark, F. B. (Secretary)---Red Boiling Springs
 East, Patterson---LaFayette
 Freeman, J. Y.---LaFayette
 Hesson, H. C.---Red Boiling Springs
 Houser, D. D.---LaFayette
 Kirby, A. Y. (President)---LaFayette
 Tucker, W. W.---LaFayette

MADISON COUNTY.

Anderson, J. G.---Luray
 Arnold, B. C. (President)---Jackson
 Arnold, John W.---Jackson
 Blackburn, J. A.---Jackson
 Brasher, George---Jackson
 Brown, R. S.---Jackson
 Clark, A. H.---Jackson
 Cottongim, J. G.---Bemis
 Crook, J. L.---Jackson
 Curry, J. M.---Mercer
 Dancy, A. B.---Jackson
 Duckworth, W. C.---Jackson
 Eason, W. B.---Jackson
 Fields, J. L.---Jackson
 Fitts, W. T.---Jackson
 Goyer, Earl---Jackson
 Greer, R. L.---Oakfield
 Hamilton, F. B.---Jackson
 Hawkins, Herman---Jackson
 Hearn, R. S.---Pinson
 Herron, J. T.---Jackson
 Herron, S. M.---Jackson
 Hopper, J. D.---Jackson, R. F. D. No. 2
 Jones, C. F.---Jackson, R. F. D. No. 1
 Jones, H. L.---Jackson
 McClaran, James---Jackson
 Murtaugh, F. M.---Jackson
 Rochelle, W. F.---Jackson

Saunders, W. G.-----Jackson
 Webb, G. L.-----Jackson
 White, R. B. (Secretary)-----Jackson
 Williamson, G. L.-----Jackson

MARSHALL COUNTY.

Culbertson, N. H.-----Chapel Hill
 Dryden, D. M.-----Petersburg
 Eatherly, W. T.-----Chapel Hill
 Gault, F. H. (President)-----Cornersville
 Hardison, C. G.-----Lewisburg
 Hardison, J. A. (Secretary)-----Lewisburg
 Hardison, S. T.-----Lewisburg
 Marsh, C. P.-----Petersburg
 Moffitt, S. A.-----Cornersville
 Reed, J. W.-----Belfast
 Reed, T. E.-----Lewisburg
 Sharp, W. T.-----Farmington
 White, Buford-----Lewisburg
 White, Garrett-----Chapel Hill
 Womack, C. W.-----Masonic Home, Nashville

MAURY COUNTY.

Anderson, H. O. (President)-----Williamsport
 Beasley, M. A.-----Hampshire
 Black, W. E.-----Columbia
 Cook, M. M.-----Santa Fe
 Covey, J. S.-----Glendale
 Doyle, A. N.-----Carter's Creek
 Edwards, J. A.-----Columbia
 English, G. C.-----Mt. Pleasant
 Faucett, P. H.-----Columbia
 Fowler, C. O.-----Spring Hill
 Gant, H. A.-----Columbia
 Hardison, T. J.-----Carter's Creek
 Jones, J. H.-----Mt. Pleasant
 Kittrell, W. H.-----Mt. Pleasant
 Perry, R. S.-----Columbia
 Pillow, Robert-----Columbia
 Pillow, Robert, Jr.-----Columbia
 Porter, O. J.-----Columbia
 Ragsdale, E. M.-----Santa Fe
 Ragsdale, L. E.-----Donelson
 Sheddan, W. K. (Secretary)-----Columbia
 Walker, M. F.-----Santa Fe
 Walton, C. D.-----Mt. Pleasant
 Webb, W. R.-----Hampshire
 Wilkes, J. W.-----Columbia
 Williamson, G. C.-----Columbia
 Williamson, J. G.-----Columbia
 Woodard, B. H.-----Spring Hill
 Yeiser, Watt-----Columbia

McMINN COUNTY

Abell, W. J.-----Decatur
 Aiken, E. M.-----Etowah
 Arrants, W. R.-----Athens
 Baisinger, J. L.-----Riceville
 Brendle, D. P.-----Englewood
 Brock, R. A. (Secretary)-----Athens
 Duboise, H. V.-----Athens, R. F. D.
 Kensinger, E. C.-----Athens
 McGahhey, Joseph-----Niota
 Nankeville, J. R. (President)-----Athens
 Ogle, L. C.-----Etowah
 Proudfoot, James L.-----Athens
 Stanton, George W.-----Athens
 Taylor, H. T.-----Calhoun

McNAIRY COUNTY.

Doty, O. C.-----Savannah
 Kendrick, R. M.-----Selmer
 Kirkland, Thos. A.-----Binghamton Branch, Memphis
 Sanders, H. C.-----Selmer
 Wallace, W. W. (Secretary)-----Selmer

MONTGOMERY COUNTY.

Bradna, J. W.-----Clarksville
 Edmondson, H. H.-----Clarksville
 Graham, R. M. (Secretary)-----Clarksville

Hughes, M. L.-----Clarksville
 Hunt, I. E.-----Clarksville
 Judah, Leopold N.-----Jewish Hosp., Cincinnati, O.
 Keatts, C. N.-----Indian Mound
 Ledbetter, J. H.-----Clarksville
 LaHiff, J. B.-----Clarksville
 Macon, R. B.-----Clarksville
 Malone, F. J.-----Clarksville
 Neblett, L. L.-----Clarksville
 Nesbitt, H. A.-----Clarksville
 Rose, J. W.-----Clarksville
 Runyon, B. F.-----Clarksville
 Runyon, F. J.-----Clarksville
 Shelby, M. L.-----Clarksville
 Tomlinson, R. H.-----Corbandale

MONROE COUNTY.

Arrants, W. H.-----Sweetwater
 Bagwell, B. W. (Secretary)-----Madisonville
 Barnes, L. L.-----Sweetwater
 Hardin, J. A.-----Sweetwater
 Kimbrough, R. C.-----Madisonville
 Leonard, W. W.-----Tellico Plains
 McClain, W. A.-----Sweetwater
 McCollum, J. A.-----Vonore
 Penland, S. N. (President)-----Madisonville
 Roberts, T. M.-----Sweetwater
 Rogers, W. A.-----Tellico Plains
 Shearer, H. C.-----Madisonville

OBION COUNTY.

Blanton, M. L.-----Union City
 Boaz, L. D.-----Harris
 Boswell, E. A.-----Troy
 Carlton, J. D.-----Union City
 Dennis, J. W.-----Union City
 Glover, Ilar-----Union City, R. F. D.
 Harris, J. R.-----Union City
 Latimer, R. G.-----Union City
 Marshall, C. C.-----Hornbeak
 Park, Ira (Secretary)-----Union City
 Prather, P. W.-----Woodland Mills
 Roland, J. L.-----Obion
 Roberts, W. F.-----Troy
 Sharpe, J. B.-----Union City
 Watson, F. W. (President)-----Union City
 White, E. H.-----Rives

OVERTON COUNTY.

Breeding, W. M.-----Livingston
 Brown, W. M.-----Hilham
 Capps, J. D.-----Livingston
 McDonald, J. T.-----Monroe
 Qualls, A. B. (Secretary)-----Livingston

POLK COUNTY.

Geisler, F. O. (Secretary)-----Copperhill
 Gilliam, W. J.-----Copperhill
 Guinn, A. J.-----Ducktown
 Hicks, T. J.-----Copperhill
 Hyde, H. P.-----Copperhill
 Kimsey, F. M.-----Ducktown
 Lewis, A. W.-----Copperhill
 Strauss, C. W. (President)-----Copperhill

PUTNAM COUNTY.

Butler, J. A.-----Algood
 Denton, Samuel-----Buffalo Valley
 Dyer, Lex (Secretary)-----Cookeville
 Howard, W. A.-----Cookeville
 MacWheeler, J.-----Baxter
 Millis, R. H.-----Baxter
 Moore, J. T. (President)-----Algood
 Officer, W. C.-----Monterey
 Shipley, Z. L.-----Cookeville
 Storie, J. R.-----Cookeville

RHEA COUNTY.

Broyles, Wm.-----Dayton
 Cusick, Wm.-----Knoxville

Jones, J. L. (Secretary)-----Dayton
Thomison, W. F.-----Dayton

ROANE COUNTY.

Carr, Hy. M.-----Harriman
Carr, J. H.-----Oakdale
Clack, J. M.-----Rockwood
Clack, W. S.-----Rockwood
Cross, John B.-----Harriman
Fly, J. C.-----Kingston
Gallion, W. E.-----Oakdale
Hill, W. W. (Secretary)-----Harriman
Neergaard, F. A.-----Harriman
Phillips, T. H.-----Rockwood
Roberts, John-----Kingston
Sewell, J. A.-----Rockwood
Smith, T. L. (President)-----Rockwood
Waller, J. J.-----Oliver Springs
Wilson, J. C.-----Rockwood
Zirkle, G. P.-----Kingston

ROBERTSON COUNTY.

Connell, J. R.-----Adams
Dye, W. B.-----Springfield
Freeman, J. S.-----Springfield
Fyke, W. F. (Secretary)-----Springfield
Johnson, T. L.-----Greenbrier
Jones, G. R.-----Orlinda
Kempf, A. R.-----Springfield
Mathews, R. L.-----Springfield
Padfield, J. H.-----Springfield
Porter, W. W.-----Springfield
Reeves, J. H.-----Springfield, R. F. D. No. 1
Rude, W. S.-----Ridgetop
Rudolph, C. W.-----Springfield
Thomas, J. W.-----Cross Plains
Winter, W. W.-----Greenbrier

RUTHERFORD COUNTY.

Adams, J. F. (President)-----Woodbury
Allen, E. B.-----Murfreesboro
Allen, J. S.-----Murfreesboro
Campbell, V. S.-----Murfreesboro
Crosthwait, G. W.-----Murfreesboro, R. F. D. No. 2
Gordon, A. N.-----Fosterville
Gott, J. R.-----Murfreesboro
Hall, J. D.-----Readyville
Huff, S. C.-----Christiana
Jamison, A. J.-----Murfreesboro
Kelton, J. C.-----Lascassas
Lowry, J. S.-----Smyrna
McCrary, M. B.-----Woodbury
McGhee, H. L.-----Milton
McKnight, B. R.-----Auburntown
Murfree, M. B.-----Murfreesboro
Mustard, H. S.-----Murfreesboro
Ousley, B. L.-----Christiana
Overall, J. C.-----Murfreesboro
Robison, W. T.-----Murfreesboro
Rucker, J. J.-----Overall
Scott, J. A. (Secretary)-----Murfreesboro
Shipp, J. M.-----Smyrna
Smith, S. B.-----Overall
Smoot, T. M.-----Woodbury
Waring, J. I.-----Murfreesboro
White, B. N.-----Murfreesboro
Wiles, S. L.-----Murfreesboro

SCOTT COUNTY.

Boyatt, F. M. (Secretary)-----Oneida
Chambers, D. T.-----Norma
Foster, J. I.-----Huntsville
Foust, W. W.-----Robbins
Longmire, W. H.-----Oneida
McDonald, B. L.-----New River
Mullins, L. M.-----New River
Phillips, Pitney-----Glen Mary
Phillips, Thomas L.-----Oneida
Thompson, M. E.-----Oneida

SHELBY COUNTY.

Abernathy, Shields-----Exchange Bldg., Memphis
Adams, J. C.-----Shrine Bldg., Memphis
Alford, W. G.-----Mallory Ave., Memphis
Allen, C. D.-----Randolph Bldg., Memphis
Anderson, E. L.-----Bank of Com. Bldg., Memphis
Anderson, S. B.-----Union & Planters Bank Bldg., Memphis
Anderson, W. S.-----Bank of Com. Bldg., Memphis
Andrews, J. L.-----Central Bank Bldg., Memphis
Ankerson, G. E.-----Exchange Bldg., Memphis
Anthony, D. H.-----Exchange Bldg., Memphis
Ayers, J. C.-----Exchange Bldg., Memphis
Bailey, C. O.-----Mallory Ave., Memphis
Barbee, Herbert-----Goodwyn Institute, Memphis
Barton, J. L.-----78 South Main St., Memphis
Baskins, L. S.-----Exchange Bldg., Memphis
Beauchamp, J. L.-----6th and Chelsea Ave., Memphis
Beck, O. H.-----General Hospital, Memphis
Bender, C. A.-----1352 Madison, Memphis
Bethae, W. R.-----Baptist Hospital, Memphis
Biggs, J. M.-----Union & Planters Bank Bldg., Memphis
Black, W. T.-----Exchange Bldg., Memphis
Blackburn, E. C.-----Randolph Bldg., Memphis
Blassingame, C. D.-----20 S. Dunlap St., Memphis
Blecker, A. L.-----Fidelity Bank Bldg., Memphis
Blue, J. B.-----Exchange Bldg., Memphis
Blue, W. R.-----Bank of Com. Bldg., Memphis
Bocellato, S. L.-----Exchange Bldg., Memphis
Bodley, J. W.-----Bank of Com. Bldg., Memphis
Bolton, L. T.-----Exchange Bldg., Memphis
Boyd, Louis-----Exchange Bldg., Memphis
Braun, W. T.-----Exchange Bldg., Memphis
Brewer, W. A.-----Goodwyn Institute, Memphis
Brinson, S. M.-----Fidelity Bank Bldg., Memphis
Bronstein, J. H.-----Exchange Bldg., Memphis
Buck, K. M.-----Central Bank Bldg., Memphis
Bunting, R. C.-----Central Bank Bldg., Memphis
Burchart, Selmer-----Exchange Bldg., Memphis
Burns, C. C.-----Porter Bldg., Memphis
Burns, W. B.-----Porter Bldg., Memphis
Bush, A. P.-----Columbia
Butler, A. H.-----Exchange Bldg., Memphis
Campbell, E. G.-----Central Bank Bldg., Memphis
Campbell, W. C.-----869 Madison, Memphis
Carnes, W. A.-----Madison Avenue Bldg., Memphis
Carter, J. H.-----Fidelity Bank Bldg., Memphis
Carter, J. P.-----Fidelity Bank Bldg., Memphis
Chaffee, C. A.-----Cordova
Chaffee, L. H.-----Brunswick
Chaney, W. C.-----20 South Dunlap St., Memphis
Chapman, L. H.-----Exchange Bldg., Memphis
Chilton, C. M.-----Exchange Bldg., Memphis
Clark, J. C.-----Exchange Bldg., Memphis
Clark, J. E.-----Forrest Hill
Clary, W. F.-----Goodwyn Institute, Memphis
Clifton, Joe-----Bank of Com. Bldg., Memphis
Colbert, W. C.-----915 Madison Ave., Memphis
Coley, S. W.-----20 S. Dunlap St., Memphis
Collier, Case-----Exchange Bldg., Memphis
Collins, J. H.-----Central Bank Bldg., Memphis
Conley, H. P.-----Bank of Com. Bldg., Memphis
Cooper, A. F. (Secretary)-----Bank of Com. Bldg., Memphis
Coors, G. A.-----293 Hernando, Memphis
Coppedge, T. N.-----Exchange Bldg., Memphis
Cox, W. R.-----115 N. Main St., Memphis
Crisler, J. A.-----Exchange Bldg., Memphis
Crisler, J. A., Jr.-----Exchange Bldg., Memphis
Cullings, J. J.-----Columbian Tower Bldg., Memphis
Daltroff, J. W.-----1098 Madison, Memphis
Davenport, R. R.-----Fidelity Bank Bldg., Memphis
Davis, J. M.-----Exchange Bldg., Memphis
DeLoach, A. B.-----Madison Ave. Bldg., Memphis
Demarco, V. J.-----Goodwyn Institute, Memphis
Dickson, Harry-----Central Bank Bldg., Memphis
Dies, J. J.-----1461 Vinton, Memphis

Dinsmore, W. T.	Florida and Iowa,	Memphis
Drake, J. R.	Police Station,	Memphis
Duncan, I. G.	Bank of Com. Bldg.,	Memphis
Durley, Howard	Whitehaven	
Durrett, J. J.	Courthouse,	Memphis
Edwards, C. W.	Goodwyn Institute,	Memphis
Edwards, S. L.	Randolph Bldg.,	Memphis
Elcan, P. D.	293 Hernando,	Memphis
Eilett, E. C.	Exchange Bldg.,	Memphis
Evans, S. S.	Exchange Bldg.,	Memphis
Everett, H. B.	Binghamton Branch,	Memphis
Fagin, Robert	Exchange Bldg.,	Memphis
Farrington, P. M.	Exchange Bldg.,	Memphis
Feldman, M.	1195 Thomas Ave.,	Memphis
Fiedler, F. W.	Exchange Bldg.,	Memphis
Flaniken, R. B.	Exchange Bldg.,	Memphis
Fleming, J. S.	Exchange Bldg.,	Memphis
Fontaine, B. W.	Exchange Bldg.,	Memphis
Francis, E. E.	Central Bank Bldg.,	Memphis
Francis, J. H.	Fidelity Bank Bldg.,	Memphis
Fraser, J. F.	Exchange Bldg.,	Memphis
French, J. E.	155 E. Galloway,	Memphis
Galloway, David		
	Union & Planters Bank Bldg.,	Memphis
Garley, George	Goodwyn Institute,	Memphis
Gerino, G. B.	Box 371, Houston, Texas	
Glover, C. H.	Exchange Bldg.,	Memphis
Goltman, A. M.	995 Madison,	Memphis
Goltman, Max	995 Madison,	Memphis
Gordon, J. O.	Columbian Tower Bldg.,	Memphis
Gragg, W. H.	Binghamton Branch,	Memphis
Graves, W. R.	Exchange Bldg.,	Memphis
Hall, E. R.	Exchange Bldg.,	Memphis
Ham, E. C.	Central Bank Bldg.,	Memphis
Hamilton, J. F.	Veterans' Hospital,	Memphis
Hardin, B. F.	Fidelity Bank Bldg.,	Memphis
Harris, J. H.	Exchange Bldg.,	Memphis
Harris, W. R.	Exchange Bldg.,	Memphis
Haskell, L. W.	Bank of Com. Bldg.,	Memphis
Henderson, R. D.	Bank of Com. Bldg.,	Memphis
Henderson, R. G.	Exchange Bldg.,	Memphis
Hendrix, M. B.	Exchange Bldg.,	Memphis
Hennessey, R. A.	Exchange Bldg.,	Memphis
Henning, Max	Goodwyn Institute,	Memphis
Henry, J. P.	20 S. Dunlap St.,	Memphis
Herring, J. H.	Baptist Hospital,	Memphis
Hill, H. G.	895 Madison Ave.,	Memphis
Hill, J. F.	Exchange Bldg.,	Memphis
Hobson, J. J.	Exchange Bldg.,	Memphis
Holder, E. M.	Bank of Com. Bldg.,	Memphis
Hoover, F. B.	Exchange Bldg.,	Memphis
Howard, W. L.	Exchange Bldg.,	Memphis
Huddleston, J. J.	Fidelity Bank Bldg.,	Memphis
Hudson, A. G.	Highland Ave.,	Memphis
Hughes, J. A.	Exchange Bldg.,	Memphis
Hundling, H. W.	20 S. Dunlap St.,	Memphis
Ireland, P. W.	Bank of Com. Bldg.,	Memphis
Jacobs, A. G.	Bank of Com. Bldg.,	Memphis
Jacobson, H. B.	Bank of Com. Bldg.,	Memphis
Jacobson, H. J.	Shrine Bldg.,	Memphis
James, D. H.	Exchange Bldg.,	Memphis
James, J. A.	Exchange Bldg.,	Memphis
Jelks, J. L.	Fidelity Bank Bldg.,	Memphis
Johnson, E. J.	Exchange Bldg.,	Memphis
Johnson, Joseph E.	Shrine Bldg.,	Memphis
Johnson, S. E.	Exchange Bldg.,	Memphis
Jones, G. P.	1143 Ryburn St.,	Memphis
Kane, Elizabeth	933 Peabody,	Memphis
Kaplin, Max	Exchange Bldg.,	Memphis
Karsch, J. H.	Fidelity Bank Bldg.,	Memphis
Kazari, J. J.	General Hospital,	Memphis
Kincaid, D. P.	Fidelity Bank Bldg.,	Memphis
King, C. C.	20 S. Dunlap St.,	Memphis
King, V. D.	Fidelity Bank Bldg.,	Memphis
Krauss, Wm.	University of Tenn.,	Memphis
Laten, O. M.	Exchange Bldg.,	Memphis
Lawrence, W. S.	Bank of Com. Bldg.,	Memphis
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Leake, N. E.	Baptist Hospital,	Memphis
Leatherwood, T. F.	Exchange Bldg.,	Memphis
LeRoy, Louis	293 Hernando,	Memphis
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Levy, Louis	Bank of Com. Bldg.,	Memphis
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Lewis, P. M.	Exchange Bldg.,	Memphis
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Livermore, George R.	Exchange Bldg.,	Memphis
Lovejoy, W. H.	218 McLemore,	Memphis
Malone, Battle	Goodwyn Institute,	Memphis
Malone, E. M.		Capleville
Mann, H. A.	Central Bank Bldg.,	Memphis
Mann, Robert	Central Bank Bldg.,	Memphis
Marshall, C. H.	Exchange Bldg.,	Memphis
Mason, C. R.	36 Mallory,	Memphis
Mason, J. W.	606 Chelsea,	Memphis
Mason, Robert F.	Bank of Com. Bldg.,	Memphis
Maurry, J. M. (President)	915 Madison,	Memphis
McCall, J. H.	Exchange Bldg.,	Memphis
McCormick, R. B.	1074 Madison,	Memphis
McCown, O. S.	Bank of Com.,	Memphis
McDavid, R. S.	141 Mill St.,	Memphis
McElroy, J. B.	915 Madison,	Memphis
McGehee, J. L.	915 Madison,	Memphis
McIntosh, J. A.	University of Tenn.,	Memphis
McKinney, Richmond		
	Bank of Com. Bldg.,	Memphis
McMahan, A. R.	Exchange Bldg.,	Memphis
McNulty, J. B.	Exchange Bldg.,	Memphis
McQuiston, J. A.		Bartlett
Meeker, Sidney	Bank of Com. Bldg.,	Memphis
Meyer, A. H.	Goodwyn Institute,	Memphis
Meyer, L. L.	Bank of Com.,	Memphis
Miller, R. H.	University of Tenn.,	Memphis
Minor, J. L.	Bank of Com. Bldg.,	Memphis
Mitchell, E. C.	1074 Madison,	Memphis
Mitchell, F. T.	376 S. Bellevue,	Memphis
Mitchell, J. I.	869 Madison,	Memphis
Mitchell, W. W.	1456 Peabody,	Memphis
Montgomery, T. R.	Fidelity Bank Bldg.,	Memphis
Moore, Alfred	Randolph Bldg.,	Memphis
Moore, Moore	Bank of Com. Bldg.,	Memphis
Moore, Thos. D.	20 S. Dunlap St.,	Memphis
Moore, W. P.	Goodwyn Institute,	Memphis
Morgan, C. H.	Central Bank Bldg.,	Memphis
Morgan, J. H.	Central Bank Bldg.,	Memphis
Moss, J. T.	Shrine Bldg.,	Memphis
Musgraves, G. W.		
	McLemore and Rayburn,	Memphis
Norman, J. S.	General Hospital,	Memphis
Nowlin, R. T.		Hollywood
Owen, Geo. W.	20 S. Dunlap St.,	Memphis
Owen, J. P.	513 E. Gage Ave.,	Memphis
Paine, Robert	1387 Tutweiler,	Memphis
Paullus, Geo. E.	Bank of Com.,	Memphis
Parrott, S. E.		Cordova
Payne, V. L.	General Hospital,	Memphis
Pearce, R. S.	McCall Bldg.,	Memphis
Pearce, L. P.		Collierville
Peete, E. M.	1298 Madison,	Memphis
Perkins, P. A.	Bank of Com. Bldg.,	Memphis
Pistole, W. H.	Exchange Bldg.,	Memphis
Polk, L. R.	993 S. Cooper,	Memphis
Porter, A. R.	Exchange Bldg.,	Memphis
Posey, W. F.	270 Hernando,	Memphis
Price, J. A.	Oakville Sanatorium,	Oakville
Prids, W. T.	1042 Madison,	Memphis
Pruitt, W. V.	Central Bank Bldg.,	Memphis
Pullian, H. N.	Exchange Bldg.,	Memphis
Qualls, H. W.	Exchange Bldg.,	Memphis
Quinn, A. G.	Central Bank Bldg.,	Memphis
Ragsdale, J. W.	Randolph Bldg.,	Memphis
Ragsdale, W. E.	Exchange Bldg.,	Memphis
Raines, E. A.	270 Hernando,	Memphis
Raines, H. R.	Exchange Bldg.,	Memphis
Reinberger, J. R.	Exchange Bldg.,	Memphis
Richards, Alma	Bank of Com. Bldg.,	Memphis

Rosamond, J. H. E.-----1074 Madison, Memphis
 Rucks, W. L.-----1074 Madison, Memphis
 Rucker, S. T.-----Fidelity Bank Bldg., Memphis
 Rudisell, A. W.-----1014 Patton, Memphis
 Rudner, H. G.-----1098 Madison, Memphis
 Sanders, L. C.-----20 S. Dunlap St., Memphis
 Sanders, E. L.-----20 S. Dunlap St., Memphis
 Sanford, C. H.-----Graham Apts., Memphis
 Savage, G. R.-----Central Bank Bldg., Memphis
 Schmeisser, H. C.-----University of Tenn., Memphis
 Schmittou, L. V.-----Exchange Bldg., Memphis
 Schreier, P. C.-----Shrine Bldg., Memphis
 Schultz, M. A.-----175 West Iowa, Memphis
 Searight, M. M.-----Exchange Bldg., Memphis
 Seay, J. G.-----Germantown
 Seligstein, M. B.-----

-----Union & Planters Bank Bldg., Memphis
 Semmes, R. E.-----Bank of Com. Bldg., Memphis
 Shea, John J.-----Exchange Bldg., Memphis
 Sibley, S. B.-----Columbian Tower Bldg., Memphis
 Simpson, W. L.-----Columbian Tower Bldg., Memphis
 Smith, J. H.-----Exchange Bldg., Memphis
 Smith, O. E.-----2146 Young Ave., Memphis
 Smythe, Frank D.-----Exchange Bldg., Memphis
 Smythe, Frank Ward-----Exchange Bldg., Memphis
 Speed, J. S.-----869 Madison, Memphis
 Springarn, M. G.-----

-----Columbian Tower Bldg., Memphis
 Stanford, J. B.-----Shrine Bldg., Memphis
 Stern, N. S.-----Central Bank Bldg., Memphis
 Stinson, W. D.-----Bank of Com. Bldg., Memphis
 Stone, J. B.-----219 Broad St., Memphis
 Strain, S. F.-----City Board of Health, Memphis
 Swink, W. F.-----1042 Madison, Memphis
 Symons, C. A.-----50 East Norwood, Memphis
 Tate, Murray-----1381 Madison, Memphis
 Taylor, Newman-----Bank of Commerce, Memphis
 Thompson, E. G.-----Goodwyn Institute, Memphis
 Thorn, S. W.-----Fidelity Bank Bldg., Memphis
 Tinkler, B. R.-----

-----Union & Planters Bank Bldg., Memphis
 Toombs, P. W.-----1042 Madison, Memphis
 Townsend, H. R.-----Oakville
 Turley, H. K.-----Exchange Bldg., Memphis
 Turner, B. F.-----Central Bank Bldg., Memphis
 Turner, C. C.-----Exchange Bldg., Memphis
 Vallery, J. A.-----Union Station, Memphis
 Vaughan, J. A.-----Exchange Bldg., Memphis
 Wadley, S. W.-----1026 Forrest, Memphis
 Wadlington, W. J.-----Bank of Com. Bldg., Memphis
 Walker, O. P.-----Exchange Bldg., Memphis
 Wallace, W. R.-----Norma
 Walton, J. W.-----141 Mill St., Memphis
 Warde, Cecil-----141 Mill St., Memphis
 Warr, O. S.-----20 S. Dunlap St., Memphis
 Watkins, E. D.-----Exchange Bldg., Memphis
 Watkins, H. C.-----Central Bank Bldg., Memphis
 Williams, A. B.-----159 Madison Ave., Memphis
 Williamson, S. B.-----Central Bank Bldg., Memphis
 Williamson, W. L.-----Central Bank Bldg., Memphis
 Wood, P. H.-----Columbian Tower Bldg., Memphis

SMITH COUNTY.

Beasley, I. H.-----Dixon Springs
 Beasley, J. J.-----Pleasant Shade
 Blankinship, F. M.-----Hartsville
 Bridges, J. G.-----Gordonsville
 Chism, J. H.-----Carthage
 Dalton, W. B.-----Gordonsville
 Garrett, Rhea E. (President)-----Dixon Springs
 High, B. J. (Secretary)-----Elmwood
 Key, R. E.-----Monoville
 King, A. H.-----Chestnut Mound
 Wilson, T. S.-----Gordonsville

SULLIVAN-CARTER-JOHNSON COUNTY.

Bachman, Harry-----Bristol
 Booher, W. R.-----Bristol
 Copenhaver, Nat (Secretary)-----Bristol

Cottrell, J. L. (President)-----Elizabethton
 Delaney, J. A.-----Bristol
 Fleenor, C. W.-----Holston Valley
 Graves, Faustine-----Bluff City
 Hutchinson, J. C.-----Mountain City
 Hyder, H. P.-----
 -----1236 10th St., N. W., Washington, D. C.
 Peavler, G. M.-----Bristol
 Peters, N. S.-----Bristol
 Reynolds, S. E.-----Elizabethton
 Robinson, N. D.-----Carter
 Sproles, W. S.-----Bluff City
 Stout, P. D.-----Bristol
 Swift, D. A.-----Butler
 Vance, W. K.-----Bristol
 Vance, W. K., Jr.-----Bristol
 Vaught, W. W.-----Shouns
 Williams, Paul S.-----Hampton
 Woods, J. O.-----Elizabethton

SUMNER COUNTY.

Allen, W. T.-----Gallatin
 Bates, Humphrey-----Castalian Springs
 Buchanan, R. N.-----Hendersonville, R. F. D.
 Carter, T. Y.-----Westmoreland
 Donoho, C. H.-----Portland
 Lackey, W. N.-----Gallatin
 Moore, W. P.-----Portland
 Oliver, J. M. (President)-----Gallatin
 Parker, John R.-----Gallatin
 Peden, E. F.-----Portland
 Reese, Homer-----Gallatin
 Roark, W. W.-----Bethpage
 Reese, Homer-----Gallatin
 Robbins, C. D.-----Gallatin
 Stevens, J. H.-----Hendersonville
 Woodson, L. Miller (Secretary)-----Gallatin
 Wright, T. E.-----Bethpage

TIPTON COUNTY.

Blaydes, A. B.-----Atoka
 Currie, H. C.-----Burlison
 Dickson, B. V. (Secretary)-----Covington
 Gillespie, G. B.-----Covington
 Kelley, N. W.-----Covington
 Lindsey, L. J.-----Covington
 McLister, W. A. L.-----Brighton
 McLister, Waldo-----Brighton
 Newman, N. R.-----Covington
 Roby, A. J.-----Covington
 Roane, Holmes-----Covington
 Sale, H. W. (President)-----Covington
 Witherington, A. S.-----Munford
 Witherington, J. B.-----Munford
 Witherington, J. C.-----Munford

WARREN COUNTY.

Cantrell, Q. C.-----McMinnville
 Maloney, R. L. (Secretary)-----McMinnville
 McGuire, H. L.-----Morristown, R. F. D.
 Mooneyham, E. L.-----Rock Island
 Page, T. F.-----McMinnville
 Ramsey, A. B.-----McMinnville

WASHINGTON COUNTY.

Arnold, J. F.-----Limestone
 Bowery, E. B.-----Johnson City
 Campbell, G. E.-----Johnson City
 Cass, H. M.-----Johnson City
 Clark, J. L.-----Johnson City
 Chipley, B. L.-----National San., Johnson City
 Dulaney, R. W.-----Johnson City
 English, A. B.-----Johnson City
 Estes, Elmore-----Johnson City
 Friberg, C. W.-----Johnson City
 Frost, Wm. Grady-----Elizabethton
 Gibson, Lee K. (Secretary)-----Johnson City
 Hankins, J. L. (President)-----Johnson City
 Hartsook, N. E.-----Johnson City

Hodge, Vernon ----- Kingsport
Horn, G. C. ----- Johnson City
Hyder, R. B. ----- Johnson City
Jones, U. G. ----- Johnson City
Jordon, J. W. ----- National San., Johnson City
Kennedy, J. J. ----- National San., Johnson City
Kennedy, W. T. ----- Johnson City
Kimbrough, D. T. ----- National San., Johnson City
Kyker, C. H. ----- Johnson City
Long, E. A. ----- Johnson City
Matthews, W. J. ----- Johnson City
McCollum, W. H. ----- Jonesboro
McFaddin, James ----- Jonesboro
Miller, H. D. ----- Jonesboro
Morelock, S. B. ----- Jonesboro
Moss, J. G. ----- Johnson City
Murray, Reginald St. Elmo -----
----- National Sanatorium, Johnson City
Panhorst, H. M. ----- Johnson City
Parrish, B. B. ----- National San., Johnson City
Payton, R. L. ----- National San., Johnson City
Randall, J. P. ----- Johnson City
Ruble, R. H. ----- Limestone
Sells, George J. ----- Johnson City
Sentiff, R. L. ----- National San., Johnson City
Stuart, F. B. ----- Jonesboro
Townsend, David ----- National San., Johnson City
Wallace, J. M. ----- National San., Johnson City
Wallace, J. W. ----- Johnson City
West, E. T. ----- Johnson City
Willis, A. J. ----- Johnson City
Woodruff, J. B. -----
A. A. Surgeon, Customehouse, New Orleans, La.

WEAKLEY COUNTY.

Bond, J. B. ----- 2142 Capers Ave., Nashville
Edmondson, H. G. ----- Martin
Fields, T. W. ----- Dresden
Hanning, H. V. ----- Martin
Little, R. N. ----- Martin
McBride, W. W. (President) ----- Gleason
Moore, J. A. ----- Sharon
Shannon, J. D. ----- Greenfield
Simmons, J. E. ----- Dukedom
Stewart, John M. ----- VanBuren, Ark.
Tatum, I. J. ----- Western State Hospital, Bolivar
Taylor, J. E. ----- Dresden

Thomas, G. C. (Secretary) ----- Greenfield
Wingo, T. B. ----- Martin

WHITE COUNTY.

Barnes, Isaac ----- Pikeville
Bradley, A. A. ----- Cookeville, R. F. D.
Breeding, W. J. ----- Sparta
Brock, W. L. ----- Sparta
Clark, E. B. ----- Eastland
Gaines, S. E. (President) ----- Sparta
Hutton, Vernon ----- Ravenscroft
Johnson, W. M. ----- Sparta
Richards, A. F. (Secretary) ----- Sparta

WILLIAMSON COUNTY.

Core, J. B. ----- Allisona, R. F. D.
Cowles, R. S. ----- Franklin, R. F. D. No. 3
German, Dan ----- Franklin
Graham, W. W. ----- College Grove
Graves, L. M. ----- Franklin
Greer, J. W. ----- Franklin, R. F. D. No. 2
Howlett, K. S. (Secretary) ----- Franklin
Moor, James P. ----- College Grove
Nolen, B. T. ----- Franklin
Paschall, George C. ----- Arrington
Richardson, R. L. ----- Franklin
Seward, J. A. -----
----- Walter Reed Hospital, Washington, D. C.
Sugg, J. T. ----- Brentwood, R. F. D. No. 2
Walker, J. O. ----- Franklin

WILSON COUNTY.

Ames, James L. ----- Lebanon, R. F. D. No. 2
Bone, J. R. (Secretary) ----- Lebanon
Campbell, J. S. ----- Lebanon
Cotton, L. D. ----- Alexandria
Davis, J. L. ----- Watertown
Doak, J. R. ----- Watertown
Dotson, Walter S. ----- Lebanon
Gaston, R. B. ----- Lebanon
Lilliard, R. Q. ----- Lebanon
McFarland, J. J. (President) -----
----- Lebanon, R. F. D. No. 4
Rhea, B. S. ----- Lebanon
Summers, J. W. ----- Gladesville
Wells, M. H. ----- Watertown
Young, C. V. ----- Lebanon

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J. F. GALLAGHER, M.D., Editor and Secretary

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COMPLETE BILATERAL DUPLICATION OF THE URETERS— CASE REPORT*

PERRY BROMBERG, M.D., F.A.C.S., Nashville

HARPSTER, Brown and Delcher, in 1922, reviewed 382 cases of multiple ureters, 40 of which were of the complete bilateral type, 28 incomplete, 10 complete unilateral duplications with supernumerary kidney, 171 complete unilateral duplications with fused kidney, 9 incomplete unilateral duplications with supernumerary kidney and 124 incomplete unilateral duplications.

This review covered the literature very completely, and brought it up to date. A somewhat similar review had been made by Mertz in 1920 covering 300 cases, 51 of which showed a complete bilateral duplication.

Since the publication of the paper by Doctors Harpster, Brown and Delcher an added stimulus to report this anomaly has evidently aroused either a more careful examination, or a desire on the part of others to report their cases, for quite a number have been added in the past two years. I regret that I cannot at this moment bring the accurate total up to date, but in all probability an additional 15 cases have been added, bringing the total to somewhere between 50 and 60 cases, to which it is my desire to add another and to emphasize a few important points already

stressed by the above mentioned authors and others.

CASE REPORT

Mrs. W. D. G. Age, 23. Referred by Dr. W. H. Witt, September 23, 1923, for painful, burning and frequent urination. Her family history is entirely negative.

With the exception of the ordinary diseases of childhood, from which no definite complications could be made out by interrogation, she has always been well, except "not very strong." She recalls an attack when she was seven or eight years of age, which she now thinks was pyelitis, but which was not diagnosed at that time. She had no further trouble until after her marriage at the age of twenty. One year later she had another attack, which consisted of frequent and painful urination with pus in her urine. She had slight chilly sensations and some fever. The diagnosis at this time was pyelitis. She was kept in bed, put on urinary antiseptics and in about ten days recovered.

About two years later, at the age of 23, she had a recurrence and it was during this attack that I was asked to see her by her physician, Doctor W. H. Witt, and found her with a temperature fluctuating between 100 and 103. with frequent and painful urination. It was in doing the cystoscopy during this attack that I discovered

*Read before the Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

the duplicate ureter openings on either side, situated one above the other, about one-half centimeter apart, the lower opening on each side being the larger of the two and situated at the normal position in the bladder, the upper being smaller and situated above the lower and larger opening. Lead catheters were passed into both orifices and on to the kidney on the right side; the cystoscope was then withdrawn leaving these catheters intact; reloaded and reintroduced and the two ureters on the opposite side were catheterized. Specimens of urine were received through each of the four catheters into separate sterile test-tubes, and labeled upper right; lower right; upper left, and lower left. After a sufficient amount had been obtained 1 C. C. of phthalein was administered intravenously and both time and quantitative determinations made, which demonstrated that the urines from the lower right and the lower left kidneys showed presence of the phthalein in three minutes, and returned twelve per cent in fifteen minutes; while in the specimens from the upper right and upper left kidneys, the phthalein did not appear until four and one-half minutes, and only four per cent was recovered in fifteen minutes. This was repeated at a later date, when all evidence of acute infection had disappeared, with identical findings. This is in keeping with the respective amount of urine collected from the kidneys; the lower on either side returning about $2\frac{1}{2}$ times the quantity of the upper.

The right side was then injected with fifteen per cent sodium-bromide, the upper right producing definite pain when 3 cc. was injected; the lower received 8 cc. and produced only a moderate amount of discomfort. Pyelograms of the right side were then made. We did not at this time feel justified in making pyelograms of the left side, but did so three days later, with identical findings on this side, both as to rate of urine flow, time and quantitative phthalein output, the only difference being that from the upper and smaller pelvis

on the right side, pus, 680 cells to the cubic-millimeter and colon bacilli were found, while all other specimens were clear and cultures were negative. The upper right pelvis was injected with three cc. of a two per cent silver nitrate, the fever promptly subsided and within a week she was clear of pus and dismissed from the hospital. Two years later she went through a pregnancy and was delivered without recurrence, but two weeks after the baby's birth she had another slight attack, the same pelvis was again lavaged, since which time she has been free from symptoms.

It should not be forgotten that a duplicated ureter usually means a double pelvis, and a double pelvis is in all probability the result of a fused kidney. Occasionally the



fusion fails to occur and the two kidneys on the same side are separate; this, however, is the rare exception.

Harpster and his co-workers say that "even when the ureteral duplication is incomplete, duplication of the kidney, including the pelves, may be surmised."

It should be further remembered that the relationship of the two pelves is one above the other, the lower usually the larger and the ureter draining this, the larger of the two pelves usually opens into the bladder at its normal site; the accompanying ureter

from the upper and smaller pelvis, may also open into the bladder, in which case it is above the orifice of its mate rarely more than a centimeter. It may, however, open into any part of the bladder or into some other part of the urological tract, as for example into the seminal vesicles, ejaculatory duct or deep urethra in the male, or in the vulva or urethra of the female. This should always be suspected as a possible cause of incontinence in a female.

The well recognized fact that the upper and smaller pelvis, being the supernumerary part of the kidney, is the part most frequently diseased, bears out the general law that an abnormal organ is more susceptible to pathological changes than a normal one.

This statement is not borne out by the observation of Braasch and Scholl, who analyzed the thirty patients who were operated at the Mayo Clinic.

They found the lower segment of the kidney to be previously involved in nine, and the upper in five, and both segments equally in thirteen. They say, "It is evident that the pathological complication is confined largely, if not entirely, to one segment in about one-half the cases, and furthermore that the lower segment is more frequently affected than the upper."

It should be remembered, however, that tuberculosis infections involving apparently only the upper of the two pelves, is very prone to have also infected the lower portion of the kidney, either through the lymphatics or the blood-stream.

Heminephrectomy for tuberculosis should not be considered in this type of kidney, as it would likely have to be followed by a nephrectomy at a later date.

Where both ureters open into the bladder, one above the other as is usually the case, the upper, which drains the smaller pelvis and the so-called supernumerary portion of the kidney is most frequently the infected one.

Braasch and Scholl say, "although there is usually a difference in size between the pelves of the two segments, we have found

the differential function of one segment is usually equal to that of the other."

This was not so in my case. The lower and larger pelvis draining the larger portion of active kidney returned twice the quantity of phthalein in fifteen minutes than the upper. This was not due to disturbed function resulting from the infection, but was observed later when the infection had been cleared up.

While it is fair to surmise that the pelves are distinctly and definitely separate, the question will often arise as to whether there is a direct connection between them. Braasch suggests "that this can be readily ascertained by injecting a solution colored with methylene blue into one catheter; if



the dye returns immediately from the second catheter, it is quite evident that the separation of the two pelves is incomplete." It occurs to me that this very practical suggestion should be routine in all cases where heminephrectomy is contemplated.

Mertz, in his analysis of 300 cases, found pathology in thirty per cent, while Braasch and Scholl, in 144 patients, found 37.5 per cent to have pathological complications. Whether this is due to lowered resistance

from the anatomic deformity or the rather high percentage is coincidental to the more complete urological examinations to which present day patients are subjected, I leave you to infer.

In analyzing the pathological lesions found in duplicated pelves, Braasch observed in the thirty operated cases—

Ureteral obstruction with hydro or pyonephrosis in eight.

Renal tuberculosis in six.

Renal lithiasis in seven.

Ureteral lithiasis in three.

Atrophic pyelonephritis in four.

In one case the aberrant ureters from the upper segment opened into the vagina; in another the obstruction was due to an anomalous vessel crossing the ureter.

Of the twenty-four cases not operated—Essential hematuria was found in four.

Unilateral infection in two.

Bilateral infection in nine.

Ptosis in three.

Ureteral stones passed after manipulation in three.

Stone in lower pelvis of a double kidney, left intact because of other complications in three.

The Surgical Operations performed in the thirty cases referred to by Braasch consisted of—

Nephrectomy in fifteen.

Heminephrectomy (two requiring complete Nephrectomy later), four.

Pelvolithotomy, six.

Urethrolithotomy, three.

Cutting an anomalous vessel to relieve hydronephrosis, one.

Ligation of aberrant (upper) ureter opening into vagina, one.

It will be seen from the above study that of the 144 patients reported by Braasch and Scholl that the deformity was discovered in sixty-one cases purely in an accidental way, in other words, in the course of a complete examination, while in the remaining eighty-three, symptoms definitely referable to the urinary tract led to the examination and the discovery. Of these thirty were operated, twenty-four were

definitely diagnosed but not operated, twenty-nine in which no definite evidence was determined had attacks of pain suggestive of ureteral colic, in many instances accompanied by fever and chills and temporary urinary symptoms, but no lesion could be demonstrated. In these Braasch concludes that "it would seem logical to assume that the anatomical deformity was subject to temporary urinary obstruction or infection."

For the present it will suffice to disregard the latter twenty-nine, and to consider only the remaining twenty-four in group two, which consisted of those not operated and of the thirty in group one which were operated.

It will be seen that more than half the cases require surgery and that slightly more than half of those requiring surgery required nephrectomy.

It will be further observed that of the fifteen cases requiring nephrectomy, ureteral obstruction with hydro or pyonephrosis was responsible for slightly more than half (8) cases and that tuberculosis slightly less than half (6) cases.

It is definitely apparent that the two above mentioned conditions are all important in a consideration of duplicated pelves and ureters.

It would be but a valueless repetition for me to consume your time in a resume of the theories which are given to explain embryologic variations capable of producing bifid ureters or double kidney pelves; suffice to say we do not know.

I merely wish in closing to stress the fact that the diagnosis is not difficult, if proper cystoscopic inspection, ureteral catheterization and pyelo-ureterography are combined.

DISCUSSION

DR. RUSSELL A. HENNESSEY (Memphis): The cases reported by Dr. Bromberg call to our attention the need of very careful examinations. In the group collected by Braasch and Scholl they have found pus in the urine which, upon ureteral catheterization, has shown no infection from the upper urinary tract. In many of these cases the patients have been treated for a cystitis of un-

known origin. I have found three of these cases in the last six years. In two of them the reduplication was a complete unilateral duplication. In the last case there was a definite bifid ureter, involving the upper ureter. All three cases occurred on the right side. Because of Mertz, who claims a tendency for bilateral duplication when it is found on one side, I made a careful search for a tendency to reduplication on the opposite side but found none.

The recitation of the first case is similar to that given by Dr. Bromberg, except that my case was a unilateral duplication. The patient had dysuria, tenesmus, with the characteristic symptoms of pyelitis. I have a few slides which I will show you, with the permission of the chairman.

Dr. Bromberg brought out that the pathology involved the upper pelvis in his case. This is at variance with the findings of Braasch and Scholl, as Dr. Bromberg brought out.

(Slide 1.) This slide is from a case that I saw six years ago. I do not know whether any ureteral stricture was found, but after pelvic lavage with 1% silver nitrate solution she had no return of the pyelitis. In the second case the patient came into the Memphis General Hospital with evidence of a very profound pyelonephritis. There was a very infected cyst of the urethra where a peri-urethral abscess had ruptured into the urethra. The patient, in spite of all our efforts, died. We removed the kidney on the right side with the ureter, bladder and the posterior urethra. The greater amount of pathology was in the lower kidney pelvis. The pelvis was greatly dilated, covered with plaques of mucus on an ulcerated mucosa. There was a definite relationship between the two segments of the kidney. This was brought out by Braasch and Scholl, who, in their very extensive series, found a definite connection between the two segments despite the separation of the pelves. I placed two small wooden plugs in the double ureter on the right side, as you can see in this picture.

The third case was a bifid ureter, involving the upper third of the ureter. This was demonstrated by the pyeloureterogram, which Dr. Bromberg brought out so well.

I have thoroughly enjoyed Dr. Bromberg's presentation of these interesting cases.

DR. IRVING SIMONS, Nashville: I think you will all agree that this last case has opened up a very interesting group for discussion. About eight years ago while cystoscoping a Negro dispensary patient I noticed four ureters and proceeded to put four radiographic catheters into the patient. That patient had nothing pathological in the kidney or ureter, but was used to demonstrate a cystoscopic technic to students. On the following day a bilateral pyelogram was done at one sitting. A small amount of thorium was injected into the four ureters, using four

glass syringes at the same time. I reported this in 1917. On the injection of 1 c.c. of the phthalein we recovered 48.5 per cent, I think in fifteen to twenty minutes, from the four sections of the kidney. The sections delivered the solution in about the normal excretion time of three to five minutes. Cultures of the four distinct ureters were negative. At that time there was only about a dozen correctly reported cases of bilateral reduplication. In that case the two upper pelves were small and triangular, whereas the lower ones were much larger. I proceeded, as Dr. Bromberg has suggested, to inject methylene blue, but could not recover it through the other channels. That, of course, would not be necessary in the event of making a complete bilateral pyelograms.

This condition was dilated upon a couple of years ago at the American Urologic Association. Dr. Mertz brought out a very interesting fact: If you inject a catheter and get a little triangular shadow in the pyelogram you should suspect a double pelvis with a single ureter. You should then proceed to examine again. Drop the catheter down and inject again and you will often then be fortunate enough to bring out both parts of a bifid pelvis.

I think Dr. Bromberg has been very fortunate to amass so many interesting cases, and particularly in being able to add these cases to the literature.

DR. GEORGE R. LIVERMORE, Memphis: I have a case in which there was duplication of the ureters on the right side only, with a single ureter on the left. You can note the definite dilation of the ureter to a point opposite the third lumbar vertebra, with the calices rather blunted, showing indication of obstruction at this point (indicating on slide). The patient was about fifty-two years old and had experienced repeated attacks of cystitis and intractable bladder symptoms. By dilating that ureter the patient has been entirely relieved.

DR. TOM R. BARRY, Knoxville (showing slide): This is an incomplete unilateral duplication. The patient complained of renal pain, and this slide stresses the importance of bringing the catheter down below the pelvis of the kidney in injecting. The urine from both pelves was normal.

This picture shows a complete unilateral duplication with the type of pelvis Dr. Simons spoke of, the infantile type. The urine from both ureters in this case was normal.

DR. E. T. NEWELL, Chattanooga: Speaking from the standpoint of the general surgeon and not that of a urologist, I wish to emphasize one point Dr. Bromberg made, and which happened to me several years ago. I had a patient from whom I removed a stone from the bladder for hemorrhage. The hemorrhage stopped and the

patient got along fairly well for a time and then developed hemorrhage again. For several months we treated that patient and then we rayed the kidney and found a large stone. That accident would not happen today. We then used small plates, about eight by ten, and rayed the ureters and bladders separately. We now use one large plate and take in all of the bladder and the ureters and kidneys.

In regard to elimination: The venereal surgeon has to eliminate shadows every day. Not infrequently when patients are having indefinite pain we make a radiograph of the pelvis, as well as the kidneys and bladder, and find shadows. We get these shadows in people of forty-five or older, in which it is impossible to differentiate them without using the ureteral catheter. We are not justified in cases of possible misplaced gall blad-

der with stones, in saying definitely whether the stone is in the gall bladder or in the kidney, or whether it is a calcified gland producing the shadow on the radiograph, until it has been differentiated by ureteral catheterization.

DR. W. S. ANDERSON, Memphis: There was one case brought out by Dr. Bromberg where two men had made a diagnosis of stone and they found no stone in the ureter at operation. I think if they had taken a stereoscopic picture they would have discovered that the stone was or was not in the ureter—just on the principle that we take a lateral and antero-posterior view of a fracture.

DR. PERRY BROMBERG, Nashville (closing): I simply wish to thank the gentlemen for their generous discussion.

CASE REPORT

J. L. MORGAN, M.D., Department of Surgery, University of Tennessee, Memphis.

M. T., Negro woman. Age 49. A servant. Admitted on gynecological service Memphis General Hospital, March 19, 1925.

History.—Chief complaint: pain in lower abdomen and across lumbar area; and dysuria.

Past Illness.—Onset acutely about three months ago. Patient has had some abdominal discomfort for past five years, the discomfort becoming more pronounced during the past few months. Pain acute in character, exaggerated on defecation and urination, pain being extremely excruciating at times. Has a generalized abdominal complaint with feeling of weight in lower abdomen.

Last menstrual period five years ago. Has two children in good health. None dead.

Past History.—Usual diseases of childhood.

Family History.—Negative.

Urinalysis.—S. G. 1012. Acid in reaction. Trace of albumen; three plus pus cells; one plus red blood cells. Blood count: Total white 9,600; neutrophils, 74; lymphocytes, 23; large mononuclears, 3. Blood chemistry: Non-proteid nitrogen, 28.4; urea nitrogen, 8.00; uric acid, 3.4. Blood Wassermann negative.

Physical Examination.—Fairly well developed Negro female lying in bed, complaining of pain in lower abdomen and across lumbar area. Head, negative. Mouth, negative. Many missing teeth—pyorrhea. Neck, no abnormal pulsation. Eyes, normal. Nose and ears, normal. Chest, normal. No rales in lungs or heart murmurs heard. Tenderness elicited on pressure over whole of lower abdomen. No definite masses palpable. Mass felt above vagina in region of bladder. Liver and spleen not palpable. Skin, warm and

moist. Glands, negative.

There is a whiteish, watery discharge from the vagina, and involuntary discharge of clear urine from small urethral orifice. The perineum is normal. The anterior vaginal wall is bulging and obstructs the vaginal examination. This mass is of stony hardness, and pressing upon it causes pain. The cervix is pushed well back in pelvic cavity. The uterus and appendages cannot be palpated on account of pain from examination. There is a fluctuating, circumscribed mass in lower abdomen and is about the size of a grapefruit.

Diagnosis.—"Vesicle calculus size of small orange." "Ovarian pedicle size of grapefruit." This examination was made by Dr. W. L. Williamson on gynecological service. Consultation requested of urological service and answered by Dr. J. L. Morgan as follows:

Large mass found in region of bladder, pressing on vagina and appears to have no connection with uterus or its appendages. Marked tenderness over suprapubic region, and it is thought that a mass could be made out in this area. K. U. B. series requested and report made of x-ray department as follows:

There is a large oval stone in bladder. Left kidney normal in size and position. Right kidney outline is not made out. Stones not found in kidneys or ureters.

This patient was accepted on urological service and stone removed on March 28, 1925. Suprapubic cystotomy under caudal and para sacral anesthesia and infiltration of tissues in median line from umbilicus to symphysis with one per cent novocain. Incision made down to bladder, the peritoneum being deflected back off the bladder wall. Bladder was opened and large stone found which completely filled

the urinary bladder. With an assistant's finger in the vagina and by elevating or rotating the stone in this manner we were able to deliver it through the wound in the bladder. A large drainage tube was an-

chored in the bladder, which was closed around this tube.

Under regular routine treatment of irrigations of the bladder with boric acid solution, etc., the patient's recovery was un-



Stone as shown by x-ray previous to operation.

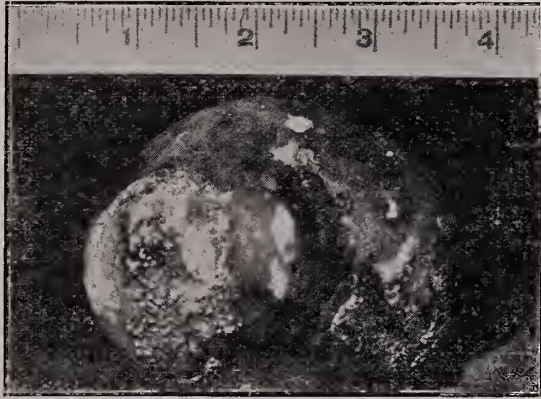
eventful, doing unusually well for this type of case.

On April 25, 1925, which is almost a month since the operation, she was taken to the operating room for cystoscopic examination. This examination revealed a subacute cystitis. There was found a normal ureteral orifice on each side, and an abnormal opening in the bladder near each ureteral orifice which had the appearance of a diverticulum. Catheters were passed up each normal ureteral orifice and specimens obtained for culture and microscopic

scope and reintroducing the cystoscope along the side of the catheters left in situ in urethra, the other two catheters passed up the opposite side, all four catheters being opaque. A bilateral pyelogram was made, which showed a double pelvis and two ureters on right side, and a single pelvis and single ureter on left side. As we were not able to make out the outline of both catheters on left side, she was cystoscoped again on May 4, 1925, and two catheters reintroduced on this side and rayed without an injection of an opaque solution. We were now able to see both catheters in one ureter. The abnormal opening in the bladder on this side was evidently due to a peri-ureteral abscess in the intramural portion which had ruptured through the mucous membrane at this point and left a connection with the ureter in this manner. There was no evidence of a cystocele in this case.

The laboratory findings of specimens of urine from each kidney was as follows: Left kidney specimen shows large amount of pus and urine cultured out colon bacilli. The specimen obtained from each pelvis on right side showed some pus and cultured out also colon bacilli. Functional test for fifteen minutes' period showed from the upper pelvis on right side a phthaleine output of five per cent, and the lower pelvis six per cent, the left kidney showing ten per cent. The kidneys were lavaged with nitrate of silver solution five times since the operation at intervals of about four days.

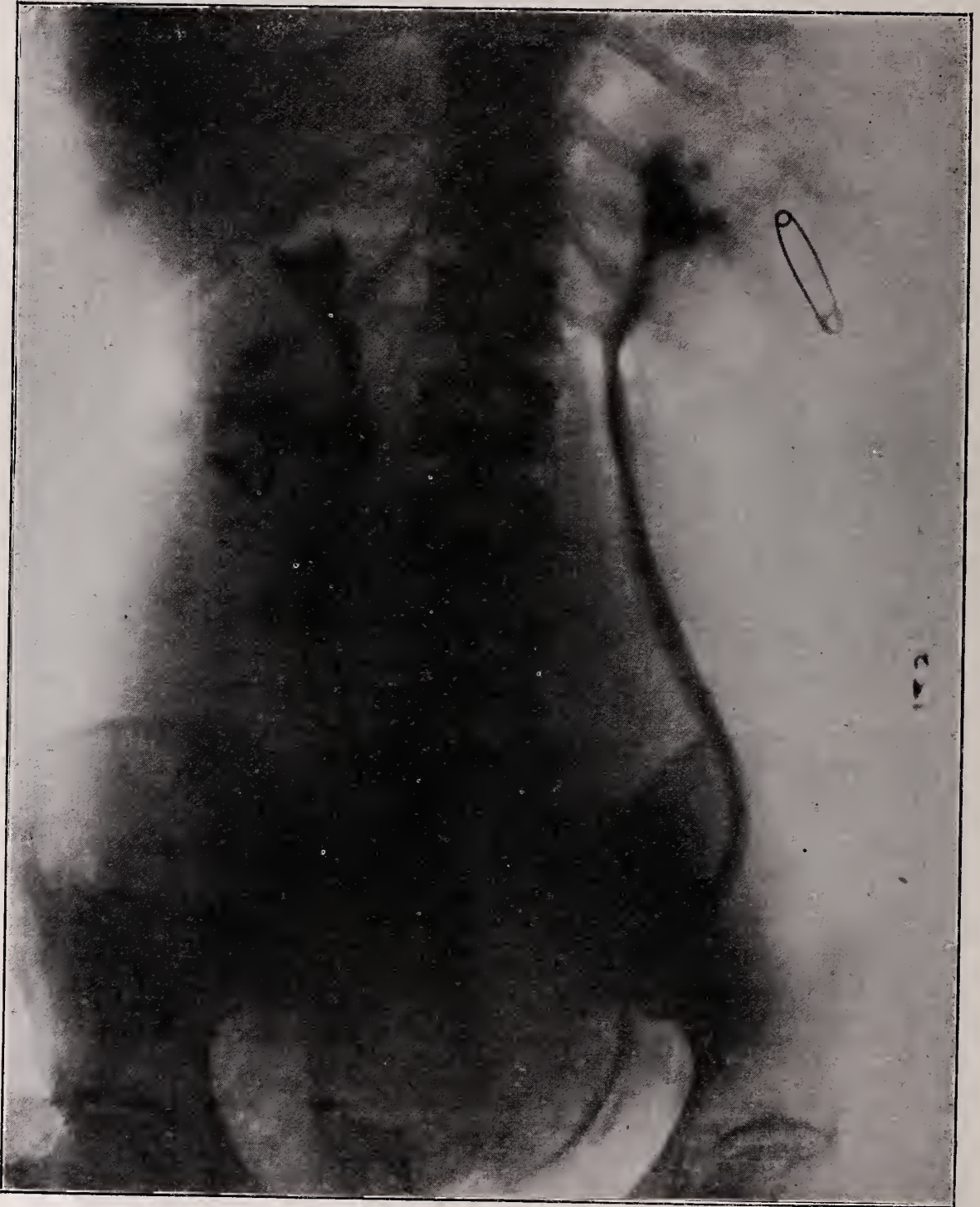
This case is considered of interest because of the rarity of vesicle calculi in women, the size of the stone, also double ureters and pelves on right side with false opening into ureter on left side. This patient is still being treated for a pyelitis which shows decided improvement.



Photograph of stone after operation. Weight, 225 grams and 6 grains; size, $3\frac{1}{4}$ inches long, $2\frac{1}{4}$ inches wide. Large circumference, $9\frac{5}{8}$ inches; small circumference, $7\frac{1}{8}$ inches.

examination. The abnormal openings were then explored with ureteral catheters which admitted the full length of the catheters. A cystogram was decided upon in order to rule out the possibility of a diverticulum of the bladder. Cystogram was made with a forty per cent solution of neosilvol. The bladder was negative for diverticulum, but showed two dilated ureters on right side and one on the left.

On May 2, 1925, patient was cystoscoped again and catheters passed up through the four openings in bladder. In order to do this it was necessary to pass two of the catheters up one side, removing the cysto-



Bilateral pyelogram and ureterogram, showing double pelvis and double ureters on right side, with a dilated ureter and pelvis on left side.

GLAUCOMA*

WALTER S. DOTSON, M.D., Lebanon, Tenn.

WE may accept the following as established: In glaucoma harm comes to the eye from increased intra-ocular pressure. When the hypertension is intermittent and slight, the eye may remain free from congestion and visual symptoms be transient and of slow progress. This is simple or chronic glaucoma. Again, if the eye possesses a glaucomatous tendency, as it is called, sudden hypertension may develop with injection—i. e., evidence of eye inflammation or inflammatory glaucoma. In a third class the onset of hypertension and extreme pain may be so severe and sudden as to overwhelm the eye. This is fulminating glaucoma.

Simple or chronic glaucoma comes on and develops so slow and gradual and is not painful and does not present any signs of inflammation, that it is frequently mistaken or is entirely overlooked by the general practitioner as well as the patient himself. It is difficult, if not impossible, to name an exact date of its beginning. Indeed, the diagnosis often escapes the oculist unless he forces himself to follow a definite routine. There may be temporary obscuring of vision; apparently frequent need for changing glasses (often in the direction of myopia and diminishing presbyopia until visual acuity lessens and then a magnifying glass may be selected). Sometimes there are halos about artificial lights; tension may be slightly increased to the fingers or the tonometer. However, with these visual symptoms one frequently will not discover elevation of tension. It is in studying field vision, with the perimeter and the eyeground with the ophthalmoscope, that one makes the diagnosis.

Contraction, especially on the nasal side, or scotoma, with certain definite features, plus the gradual glaucomatous cupping of the optic disc give the diagnosis. It must not be understood that the word gradual refers to the cups, but rather to the time, as we can differentiate the cup of glaucoma from the cup of optic atrophy or a physiological cup, with the ophthalmoscope, by observing, studying and measuring the depth of the cup and especially the sharpness and abruptness of the edges of the cup, which we find in glaucoma. "At this time when the pseudo-scientist called the optometrist is so prominent, the medical advisor should be put on his guard." "The fact that a patient of fifty years or more requires frequent changes of glasses is of itself a matter of grave suspicion, provided the refraction work is correctly done in the first place."

The refractive changes in chronic glaucoma are thought to be due to one of two influences: (1) Lowering of accommodation due to hypertension with consequent increase in presbyopia, and (2) swelling of the lens with just the opposite effect on refraction—i. e., increase in refraction with apparent myopia and lessening of presbyopia. This latter may be the precursor of peripheral lens striations which can easily escape notice. Every case of so-called incipient cataract should be carefully watched from this standpoint. The hypertension in such a case may be regarded as secondary to the lens swelling, thus making the glaucoma technically secondary. However, this fact does not interfere with the point under consideration—namely, that apparently progressive myopia in an individual over fifty years of age (so-called second sight) may lead to glaucomatous changes due to lens swelling. This is

*Read before the Tennessee State Medical Association, Knoxville, April 8, 9, 10, 1924.

beautifully illustrated by the report of a case by Dr. Hiram Woods, as follows:

"Some years ago a lady of 58 consulted me about an increasing myopia for which an optometrist had, every few months, ordered concave glasses of increasing strength. He strengthened the glasses as long as he could give satisfactory vision. When he was unable to do this, he told her she was developing "Second Sight," the forerunner of cataract. Minus 2 sphere gave her 20-70. Her field was limited to 10 degrees, tension plus one to the fingers (it was before the days of the tonometer), and there was typical glaucomatous pitting. Under treatment with myotics, the case was kept under control during the rest of her life, three or four years. Better vision could have been preserved by an earlier diagnosis." Dr. Woods further says: "Here was a patient who, under the advice of her physician, accepted the diagnosis of an optometrist, or optician, as he was called, because the aforesaid optician had properly corrected the doctor's own presbyopia. The characteristic greenish appearance of the glaucomatous pupil had finally led to the diagnosis of cataract. The patient was waiting for its maturity." This case illustrates not only the possible evils of optometry, but, with the following case, emphasizes a real danger hanging over persons with so-called incipient cataract:

"A lady came into my hands after being under the care of a very careful diagnostician, who had warned her to report at regular intervals to observe the ripening of her cataracts and told me that it had been six months since her last eye examination, but she consulted me because her eye was acutely congested, pupil dilated and painful. She said that these symptoms had developed two or three months previously; and that she had not been to see me because she was sure it was only the development of the cataract and she wanted to know if it was ready for operation. She had sub-acute glaucoma and an iridectomy saved the vision that was left, about 20-50, with contracted field. The so-called incipient cataracts never ripened, but they misled. Often they do not mature."

This case, considered with the other, presents two very important truths. Even if peripheral lens opacities are found, the term "incipient cataract" is a misnomer. It gives the patient mental torture and, worse still, makes him take a wrong view of his entire eye condition.

Dr. Woods further says: "That in his judgment the term 'incipient cataract' should be left out of our nomenclature, and if, however, the lens opacities are mentioned at all, (and undoubtedly they should be to some member of the family), there should be added and forced home the statement that 'ripening' cataracts do not give pain, and that when pain or congestion come, something else is indicated."

It is always best to tell the patient or some member of his family that there is no reason why an eye with a clouding of the lens should not develop something else, and that regular inspections of the eye are necessary, and that if pain comes it may be very significant.

Aside from the visual changes of glaucoma, perhaps pain will be the principal symptom that causes a patient to come to his physician, seeking relief. The neuralgic pains of glaucoma may vary from a peculiar sense of discomfort to a severe pain of characteristic nature. There is a vast difference between the constant bandlike supraorbital pains of eye strain and the periodic boring eye or temporal pains of glaucoma. Either might be called neuralgia by the patient and would naturally take him to his physician. The physician should be able to distinguish between the two classes of pain, or ought at least to know that such symptoms demand eye study by a trained ophthalmologist.

Again quoting from the article by Dr. Hiram Woods, he says: "Passing allusion must be made to another easy and wrong diagnosis. For many years, and to a certain extent even now, rheumatism or a rheumatic tendency has been accepted as an explanation for various sensory disturbances. 'In most of our text books there is a description of rheumatic eye disease.' 'Inflammatory glaucoma was once called "ophthalmia arthritica," and chronic glaucoma has often been thought rheumatic because of the occurrence of muscular pains, etc., during its course.' Consider this for a moment in the light of what we now know about rheumatism and neuralgia. We may at the same time consider arteriosclerosis, based on the feeling of radial resistance. Neuralgia, rheumatism and beginning arterio-sclerosis are sometimes necessary, but always insufficient diagnosis. All have a cause. Focal infection is now recognized as a frequent producer of just these very things.

"When we speak of chronic primary glaucoma, we mean an eye going blind with

a moderate hypertension, slow development of the glaucoma cup and nerve atrophy, accompanied more or less irregularly by other symptoms, with fundamental cause unknown. May it not be possible that a focal infection can produce temporal neuralgia and intermittent ocular hypertention of low degree, just as we know it sometimes produces choroiditis with secondary hypertension—the same process, but of less severity and acting on the neuro-retina rather than on the uveal circulation? These sensory and vascular disturbances ought to be studied from the standpoint of focal infection. Whether the symptoms be neuralgic, rheumatic or hypertonic, search for an infection focus or a peripheral irritant will necessarily involve the sinuses and eyes. Thus study of remote disorders may reveal an unsuspected glaucoma.”

Acute inflammatory glaucoma has at least four cardinal symptoms that are always present: (1) Increased tension, (2) Pain in the eyeball and brows, (3) Inflammation with its accompanying redness and swelling of the eyeball, and (4) Dilated pupil which is usually oval and irregular. Now there are many other symptoms of glaucoma, and I will name some of the most important, but these four cardinal symptoms are the ones that bring the patient first to the general practitioner, and these four symptoms stand out like flaming headlines in a newspaper. Finding these four symptoms present should always cause us to look further, examine more closely, read the smaller headlines, as it were, and finally to differentiate the diagnosis by group symptoms comparison, elimination and classification, or to read the fine print which is the body of the article.

The first symptom named, increased tension, is always present and is the cause of other symptoms.

The patient feels this tension himself and may call your attention to it. However, you should never fail to test the hardness of any painful or inflamed eye. You can do this roughly with the tips of your index fingers alternately palpating the

eyeball through the closed upper lids. Compare this hardness of the patient's two eyes, then to some other person's eyes, or even to your own eyes. We now use McLean's tonometer in all suspicious cases as a routine and like it very much. Butyn is our choice of the anesthetics used in taking the tension with the tonometer, as it neither dilates or irritates.

(2) Pain is always present in the acute inflammatory type of glaucoma in varying degrees, depending, of course, for its severity on the acuteness of the attack and the sudden amount of the increased tension. Pain is found in other eye diseases and is therefore not a pathognomonic symptom, if considered alone, but coupled with the other symptoms named, especially hardness of the eyeball, it stands out like one of the main words on a signpost, and no case of pain in the eye should ever be dismissed as a neuralgia and prescribed for with either morphine, acetanolid, aspirin or any other of the anti-neuralgic treatments, without a more careful and thorough examination of the eye, for I regret to say that such treatments administered to painful eyes with a very superficial examination, if any, has been the direct cause of many cases of unnecessary blindness. Painful or inflamed eyes should never be prescribed for over telephone or by messenger, for it is much better not to prescribe or give anything for relief than to give the wrong treatment, and this is a mistake that any one may make unless they do make the best eye examination they can. Even if the pain could be relieved by morphia, we make the mistake of masking the important eye symptoms that stand out so boldly as red lights for danger signals, and thereby lose important time by sinning away our day of grace for giving the treatment that might be the means of preventing another unnecessary case of blindness.

(3) Inflammation with its accompanying redness and swelling, like pain, is a cardinal and important symptom; but if considered alone, it is not a pathognomonic symptom. Every inflammation of an eye should

be carefully examined before it is prescribed for and a differential diagnosis made. We should have in mind three important eye diseases in every inflamed eye we examine—viz.: Conjunctivitis, iritis and inflammatory glaucoma. No treatment whatever, not even the simplest eye drops, should be given unless we can feel rather sure of our differential diagnosis for the treatment for these three diseases is as much different as the day is from the night and are as wide apart in effects as the east is from the west. The treatment that will cure one will render the eye blind in the other. A simple differentiation is made by observing the depth and the increasing size of the blood vessels of the wide open eye.

Conjunctivitis presents large blood vessels superficially located or in the covering of the eyeball instead of the eyeball itself. These vessels are smallest at the cornea and grow larger and more tortuous as they reach the fold or culdesack of the conjunctiva and pass on over on the conjunctiva of the lid beyond the fold. You can massage the vessels vertically through the lids and remove all the blood from them, and as you raise the lid the massaged space or surface appears bleached, but you will note the blood return to the vessels in this space at once.

Discharge is usually present in a conjunctivitis and absent in iritis and glaucoma.

In both iritis and glaucoma the blood vessels are deeper located and are in the sclera or eyeball itself. They are larger as they approach the cornea and get smaller as they diverge away from the circumference of the cornea and are known as circum-corneal injection or circum-corneal inflammation. Massaging either of these through the lids does not bleach these vessels but rather increases their lumen, and they appear darker red than before.

In order to differentiate glaucoma from iritis, we must consider the pupil, which is dilated in glaucoma and irregular or oval in shape, while in iritis the pupil is contracted.

The tension is increased in glaucoma and normal or even decreased in iritis. The iris is pushed forward, due to the intra-ocular pressure in glaucoma, producing a shallow anterior chamber, while in iritis the anterior chamber is normal in depth, or if any difference deeper than normal.

Examination of the cornea also assists us in the differentiation, for in glaucoma, due to this pressure, the cornea is steamy or even cloudy and resembles warm breath blown on a cold glass. The greatest cloudiness is located in the center or anterior part of the cornea and radiates outward.

Another important corneal symptom of glaucoma that differs from any other eye disease is anesthesia of the cornea. This symptom can be determined by drawing a small twisted shred of cotton across the cornea, which will not be felt by the patient or cause the lids to bat or close to protect the eye of an acute inflammatory glaucoma.

Last, but not least, is a vision symptom noted by having the patient look directly at an artificial light, when he will notice a circle of dimmer light sprangles radiating from and around the main light, or he may describe it as a "halo" or satellites of rainbow colors surrounding the light. This one symptom will be found in glaucoma only.

Treatment.—I did not intend to discuss the different treatments, especially the merits of the different operations being done for glaucoma, but will only mention the neglected treatments, which consists in hunting out, running down and the clearing up of any local infection in the sinuses, tonsils, teeth or anywhere else.

Nonoperative treatments consist of elimination through the bowel, kidney and especially the skin. The pupil should be kept contracted by eserin ointment one-half to one per cent. The pain is relieved by hot compresses applied fifteen minutes at intervals of one, two or three hours. The tension of the eye can be lowered ten degrees by the tonometer by one minute's massaging of the eye ball through the upper lid with the finger tips, just as you

would use the tips of your two index fingers one eye, through the lid, pressing alternately with one and then the other, in order to determine or rather to approximate the amount of tension in the eye ball. This eye massaging should be done by yourself, your assistant or the nurse whom you have taught how. I learned this treatment accidentally several years ago and have been using it myself ever since, but had not reported it either in a medical society or in any medical journal, but had only talked of it privately to some of my personal friends. Therefore, while it was perfectly original with me, I will not claim to be its originator, since I read an article about two years ago from my beloved friend, Dr. E. C. Ellett of Memphis, Tenn., reporting that he was using the same treatment almost the same way that I was so I therefore bow my head, my report and my opinion to Dr. Ellett.

DISCUSSION

DR. M. S. HERRON (Jackson): I feel sure that this most interesting paper deserves a great deal of discussion, and that Doctor Dotson, in giving it to us, means that out of this presentation of the fundamentals of glaucoma should come a great deal of thought.

As to the cause of glaucoma, you know the medical profession at large has never known very much about it. I am inclined to disagree with Doctor Dotson as to the cause. I really believe the cause of glaucoma lies within the sphere of the eye and not in some outside focus. I have seen a great many cases where they could find absolutely no sinus condition of any kind. I have talked to my father a number of times before I graduated in medicine or ever attended medical college, and he has treated a number of cases of glaucoma throughout his forty years of practice, and he has always been of the opinion that snuff was the cause of glaucoma. You can take it for what you will. I have gone into the history of every case of glaucoma I have ever had and back into the history of my father's cases that he has left for me, and in every instance I have found that these patients were users of snuff in some form—tobacco. You get that in your vitamin studies. But I think if you will go over your cases of glaucoma you will find that the use of tobacco in some form has something to do with the glaucoma. Why could it not be when we have tobacco amblyopia?

As to seeing acute cases, I do not believe that

many of us see cases of acute glaucoma. If we will look into the history of the cases from four to eight years back we will nearly always find that the case is an exacerbation of a chronic condition which has remained there for years, and the cases only come to us when this exacerbation takes place.

As to operation for glaucoma, I am a little bit prone to delay in operating on these cases. I think there are two or three things that should come into our minds before we operate on a case of glaucoma. Probably the most basic point we should consider is the age of the patient. Why should we take a patient 75 years old and operate for glaucoma when we can relieve the eye by simply treating it? If a patient 55 or 60 comes to us with an acute exacerbation, in some cases we probably are justified in operation. We have very little certainty as to the amount of vision we are going to get after operation, and surely the operation has absolutely nothing to do with the condition occurring in the other eye. While we are on that subject let us remember that glaucoma is bilateral and not unilateral, and we are doing our patients the most grave injustice when we treat only one eye and relieve the symptoms in that eye and allow the patients to go back into the world and give them absolutely no warning and no treatment for the good eye. My rule is to use one-half of 1 per cent eserine in the good eye throughout the rest of their natural life, one or two drops every day in the good eye. I do not know just how much good it does because I have not as yet the years back of me, but perhaps in a few years I can look back and see where I have saved an eye that might have been lost.

As to dionin in these cases, I have tried it in a limited number of cases, but as yet I do not see that I am getting any material benefit from its use. I am using it because it is being pushed by some of the authorities on glaucoma. I cannot see that it does any harm, and if it does any good I am thankful for that.

The great trouble with our glaucoma cases, as Doctor Dotson brought out, is that we do not get the cases until a very late period. The optometrists and opticians have all these cases and have fitted them with glasses time and again, and we get the case when it is in the last stage. Just recently I had a patient who was brought to the hospital on a stretcher with empyema of the antrum. The diagnosis had been made and the patient treated for four weeks. An x-ray was taken of the case before I was called, and finding no shadow I was called to make an examination of the head. I raised the eyelid and found a typical glaucomatous case. That is the way we get a great many of our cases, that have been treated for conditions that do not exist. Suffice it to say that this woman was 76 years of age—she was placed in the hospital and the internes advised me

it would be impossible for her to take an anaesthetic for an iridectomy. I treated her with hot packs, and eserine and dionin, and after ten days the pain was entirely relieved and she was dismissed.

I thank Doctor Dotson for this paper. I am sure we have all gotten a great deal out of it.

DR. W. G. KENNON (Nashville): As Doctor Elliot says, we must not regard glaucoma as a local disease entirely. We must look into the general condition of the patient and attempt to relieve any bodily dysfunction which they may have.

Glaucoma is such a broad subject that to attempt to take up all of its phases in one paper is almost impossible. As to treatment—there are so many different treatments for chronic glaucoma; but for definite acute glaucoma there is only one, and that is an iridectomy. That, of course, is my personal opinion, but it is based on a large number of cases. I think an iridectomy is the operation of choice.

The slight rise in the cases of cataract I do not think is of great importance. They are easily controlled and are due solely to lens swelling.

There is not much one can say in the discussion of Doctor Dotson's paper, because he has not laid himself open to any criticism whatever. I do not like the McLean tonometer. I do not think it is worth the nickel plate that is put in it. I use a Schiotz or Gradle with more success and satisfaction.

DR. J. L. BRYAN (Nashville): There are a number of phases to be taken into consideration. Personally, I am very fond of the use of eserine in the treatment of certain forms of glaucoma, but I believe, like Doctor Kennon, that in the acute cases operation gives the best result and the quickest result. For the pain, hot packs and sometimes some of the opiates or narcotics are used.

I read an article in the Journal of the American Medical Association recently, written by Dr. Reese of New York, on a new form of iridectomy he is doing that seemed to offer greater advantage over the usual iridectomy for the glaucomatous eye. I have not had the opportunity to try it out and I do not know.

DR. LUTHER C. PETER (Philadelphia): The etiology of glaucoma is such a big subject that one hardly knows where to begin. It seems to me, however, that the real underlying basis is in the eye itself; but there are so many other factors.

In my experience glaucoma occurs mostly in people who are of a more or less of neurotic temperament, people who are under great mental strain, who worry—not only business men, but people in general who worry. That seems to be one of the largest precipitating factors. And then there is another important factor. A great majority of these patients are constipated. The condition of the gastrointestinal canal is a tre-

mendous factor in the production of glaucoma, although I believe that the real inherent condition is in the eye itself—a disproportion between the lens and the size of the globe. In most cases of hyperopia there is disproportion between the lens and sphere greater than in myopia, and yet recently I have had two cases of glaucoma in high myopes, a condition which is very unusual.

I would like to discuss one other phase, and that is the treatment. It is my conviction that we should regard glaucoma from the beginning as a surgical disease, not a medical one. The man who temporizes with glaucoma will lose the patient's eye. I know that in this statement I will be contradicted by some of my confreres who are great enthusiasts on the question of miotics, and yet two of these men, who are recognized authorities and who made extensive studies some years ago, practically admitted that miotics simply postpone the fatal day. We can hold certain types of glaucoma with miotics, but in a majority of them the fatal day is due and it is the exceptional case that can be carried through for years without much visual loss.

It is a very nice point to decide when to depend upon miotics and when to operate. When a patient is well advanced in years, 70 or over, one naturally should endeavor to avoid operation if miotics will hold the vision during the patient's lifetime.

But take a patient under that age, 60 or younger, and one must think of the length of time the patient is apt to live.

As to the type of operation, in acute glaucoma I think there is but one operation, and that is iridectomy, whether the Reese type or the one usually practiced. The Reese operation is good. The wound is closed promptly. It is difficult to do, but the wound is closed promptly, and for that reason I think it is a good surgical procedure in acute glaucoma. The acute cases are the only cases in which an iridectomy is worth while. Like miotics, an iridectomy is only temporary in its effect. Probably I am a little radical in that respect, but I stand with Col. Elliott and Col. Kirkpatrick in this. They have had a larger experience than any of us in glaucoma and their experience has been so thoroughly in favor of trephining that we should profit by following their lead. I have personally performed several hundred trephinations. Before Doctor Reber died, we jointly trephined fifty-six times, and since his death I have continued to do this operation when occasion requires.

In regard to late infection, Col. Elliott reported a suspicious case in the last six months—the first in all his experience of at least 1,500 cases trephined. In my experience I have had one suspicious case, but it finally came through. Late infection can be avoided if the technique of the operation is correct. If the conjunctival

flap is made large, and as thick as the tissue will permit, the cornea is split and the trephine opening is placed far forward, the results are usually satisfactory. If the flap is too thin one may get a late infection. But on the other hand, if you endeavor to split the cornea you will have a covering for the opening and are not apt to have a late infection. We all know how risky it is to attempt to do an iridectomy when the field is cut down to 10 degrees. Most of us will not try it. I have never had the experience of lost vision on the operating table in trephining; the interior chamber is emptied so slowly that there is no risk in trephining. In iridectomy and by the LaGrange method the anterior chamber is emptied too rapidly; the incision is too large. These are the cases in which there is risk of losing the sight on the table. For that reason I prefer the trephine.

I speak of this rather at length because I should like to make converts of those who are in doubt. I hope the operation will be used more and more because the results are exceedingly satisfactory.

DR. E. C. ELLETT, Memphis: One little point in the technique of trephining has been a great help to me in avoiding the trouble of which Dr. Peter has spoken. If you precede the operation by a subconjunctival injection, preferably of an anaesthetic, put in above, it makes the flap very thick and easy to handle. With the added tissue and the oedema you escape buttonholing and get a satisfactory flap.

Some one has said about miotics that whether they ever cured a case of glaucoma or not, they certainly are responsible for the loss of many eyes. I held one case of glaucoma with miotics for sixteen years without any loss of the field or vision, and then she had an acute attack and had to be operated upon. Fortunately, the eye was saved, for she only had one eye. Here is the class of cases that worry me more than anything else, where a patient has lost one eye and comes with glaucoma in the remaining eye, but with good vision and a good field. We can fool ourselves all we want to, but we know that a certain number of cases that we operate for glaucoma are lost, either from the operation or in spite of the operation, and I always have a great deal of hesitancy in operating for fear that I lose what is useful vision. In such cases I am inclined to give miotics a long course of trial, except in cases who, for geographical or mental reasons, will not carry it out. What is the use in prescribing the miotic treatment, to which there is no end, to a man that you know will not carry it out a week? What is the use of prescribing it for some person who had to save up a year to get railroad fare to come to you, and is going back as soon as possible and will not come to you again? These are the types of case that you are bound to operate at once.

Last night I referred to the statistics on blindness in Missouri, and if you will remember, 10 per cent of blindness in that state is due to glaucoma. That ought to be a very striking lesson to us of the ultimate fate of these people unless we do something for them.

I would like to mention Dr. Martin Cohen's tonometer. It is a mercury tonometer and instead of reading by means of balanced weights it reads directly on a column on mercury in a tube. It has been more satisfactory to me than any I have tried.

Two years ago, when Dr. Magitot was in this country, he said in a personal communication, that he was more and more coming to believe in syphilis as the cause of glaucoma. That was a very remarkable statement and we questioned him in some detail about it, and he said that all the glaucomatous eyes that came for pathological examination in his hands showed evidence of syphilis in the iris.

I think there is probably a good deal in the point Dr. Dotson made in regard to the question of foci of infection, particularly in looking away from the eye for the cause; and I also think the matter Dr. Stucky mentioned yesterday—the question of diet—is important.

I have found dionin a great help in one type of case, and that is in acute glaucoma as an adjunct to other treatment. Sometimes you cannot get the tension down with eserín and hot applications, and in those cases dionin will sometimes have a very satisfactory effect.

DR. J. B. BLUE (Memphis): At the Memphis General Hospital we have had opportunity to study glaucoma in negroes—so many of them come in with glaucoma. Certainly the neurotic theory as a causative agent does not work with them, for they are not worrying about anything. In regard to treatment of that type of case, we never give medical treatment. We operate. We believe that is the only thing to do, because they will not use medicine even a week.

All of these cases are studied thoroughly to find evidence of syphilis, but it is very seldom that they show any such evidence. So we cannot say from our work that syphilis is any factor in the cause of glaucoma in negroes.

DR. J. A. STUCKY (Lexington, Kentucky): I hesitate to say anything more about this big topic. It is like the brook—it goes on forever. Ten or fifteen years ago we saw an appalling number of cases of glaucoma in the mountains. We also saw a lot of dead teeth in the prematurely aged. We saw hundreds of cases of focal infection, and we did a great many iridectomies. At that time we were following Elliott and did some trephines. But we have done very little operating for glaucoma in the last six or eight years. I believe the larger number of cases we see are due to either focal infection or toxins.

One of the routines in my clinic is that if there is evidence of decayed teeth they take a stereoscopic x-ray of the patient, remove the foci of infection, put the patient to bed and begin the use of saline cathartics, repeated every two or three hours until there is free purgation and diaphoresis. In addition to that we use miotics.

In cases such as Doctor Elliott referred to, where there is only one eye, I certainly would advise an iridectomy. I am willing to be converted again to the trephine, like Webster Fox and some of the rest; but in my hands iridectomy has given be the best results. I believe after a while we will find glaucoma, like trachoma and some other conditions, is a deficiency disease.

DR. J. McCHESNEY HOGSHEAD (Chattanooga): I thoroughly agree with what Doctor

Stucky has said. Of course there are acute cases where you can operate, and I follow the Reese iridectomy. But you go back to your blood chemistry and take and throw it into an acid solution and make it swell up and burst, and then throw it into an alkaline solution and make it shrink. That supports the toxæmia and acidosis theory. If you add iridectomy to Doctor Stucky's treatment I believe you will do as much as any man can for glaucoma.

DR. WALTER S. DOTSON (closing): I want to thank the men who have been so free and frank in discussing this paper. It is late and I will not go further. I intended to bring out something as to treatment, but I saw the paper would be entirely too long, and I cut that out.

THE OPERATIVE TREATMENT OF SPASTIC CEREBRAL PARALYSIS*

J. S. SPEED, M.D., Memphis

SPASTIC cerebral paralysis is a disease of the motor nerve and muscle mechanism of the body. It is characterized by spasticity and incoordination of the lower and upper extremities. The disturbance is caused by an injury to the motor cortex of the brain around the fissure of Rolando. The pathology may vary from a simple irritation to the cortical motor cells from dural adhesions, subarachnoid cysts and moderate sclerosis, to complete destruction of the motor area, with softening or marked fibrosis and atrophy of the cortical motor cells.

Etiology.—The condition usually dates from birth, and is due to rupture of a cerebral blood vessel during the molding of the child's head as it passes through the birth canal. I base this statement both on the reported findings of others, autopsy material on new born children and from a critical study of over two hundred cases which we have personally examined in our clinic. The hemorrhage is usually from vessels in the falx cerebri and spreads like a fan over the cerebral cortex. Less often it is a hemorrhage directly into the substance of the brain. Prolonged and difficult labor or hasty extractions with force are usually responsible for the injury. Unusual fragility of the cerebral vessels due to prematurity of the child is a predisposing factor. Most text books mention congenital syphilis as an important causative agent. A careful study of our series has not borne this out. Less than five per cent had a positive blood Wassermann reaction. And in very few others were there stigmata of congenital syphilis. In a series of fifty cases on which both blood and spinal fluid examinations were made there was not a single pos-

itive reaction in either. In no case have we found a positive spinal fluid in which the blood did not also give a positive test.

Meningitis and menigo-encephalitis, occurring later in life in a previously healthy child, account for a certain number of cases.

Hydrocephalus and certain other cerebral malformations account for a small number.

Symptoms.—The usual history is that following a difficult labor the child was cyanotic and hard to resuscitate. It may have had one or more convulsions. Later in the severer cases it was noticed that the child did not hold its head up, could not sit up or grasp objects with its hands. When it tried to crawl it was seen that the child did not have proper use of its legs; they drew and were stiff. Many never learned to walk. Other milder ones walked first at two or three years. The gait is stiff and unsteady. The legs tend to cross and the heels to draw up off the floor.

The mentality varies from that of a hopeless idiot in the severe cases to normal mentality in the mild hemiplegias and diplegias. There is some impairment of mentality in about sixty per cent of the cases.

The spasticity may involve one extremity, a monoplegia; both arms or both legs, a diplegia; one arm and one leg, a hemiplegia; or both arms and both legs, a quadriplegia.

The most common type of lesion is a hemiplegia or a quadriplegia with the arms less severely involved. The legs are more often and more extensively affected because the motor area for the lower extremities is near the top of the cortex and is first involved by the hemorrhage as it comes up from between the cerebral hemispheres.

*Read before the Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

Dowman and Hoke have divided the cases into two groups: The pyramidal type in which the lesion is entirely in the motor area and is characterized by spasticity of the muscles with little or no incoordination or athetosis. The extra pyramidal type is due to lesions of the motor coordinating mechanism probably located in the corpus striatum and the region of the red nucleus. I have found it difficult to follow this classification to any practical advantage as most of the cases present both symptoms and fall into the mixed group.

There are two causes of the disability:

1. The general spasticity which prevents coordination and contraction of the various muscle groups.

2. Fixed contractures with resultant structural changes in the shape of the bones from being held for years in abnormal positions.

In performing any intentional movement of an extremity there is a delicate balance of muscle tone between the opposing groups of muscles. One relaxes as the other contracts. In spastic paralysis this balance is lost. All the muscles go into a state of contracture at the same time. Naturally the stronger groups overcome the resistance of their weaker antagonists, and the extremity is drawn into the position resulting from the action of the stronger group. In the thighs the adductors are stronger than the abductors. Therefore, on attempts to walk the thighs are drawn together, one thigh often crossing over the other, giving the scissors gait which is characteristic of the severe cases. Likewise the hamstrings flex the knees, and the posterior calf muscles draw the heels up.

In the arm the pronators and wrist flexors predominate.

In young children these deformities can be easily corrected when the child is relaxed, during sleep or anesthesia. But as year after year goes by, there is a gradual contraction and shortening of the habitually overactive muscles. The bones themselves undergo certain changes in shape as

they grow with the limb in a distorted position. Weight bearing with the limb contracted tends to increase these deformities. Hence in time the deformity becomes "fixed" and cannot be corrected even though there is a complete functional relaxation of the muscles.

Treatment.—The condition has been recognized and its underlying pathology has been understood for many years, but we have no treatment that is really satisfactory. It is generally conceded that we cannot remedy the damage to the cerebral cortex. Sharp, in New York, has advocated decompressions and has done a large number of them, but the results have been very disappointing. Some few cases, in which there is a large localized cyst, have been improved, but the general cerebral damage has not been affected.

Our main efforts at improvement must then be directed to the extremities themselves. The earlier work was limited entirely to tenotomies and muscle transplantations. It was found, however, with the overactive nerve supply still intact that the contractures recurred and that the transplanted muscles did not function any better in their new locations than in the old.

The next attempt was to do a resection of the dorsal sensory nerve roots as they enter the cord, hoping in this way to reduce the spasticity by breaking the reflex arc and shutting off the sensory impulses to the brain. This also proved a failure.

The next, and what has so far proved to be the most successful method was a partial resection of the motor nerves to the overactive muscle groups. This was first advised by Dr. Adolf Stoeffel of Heidelberg, Germany. There are certain strong muscle groups whose spasticity is usually the cause of the difficulty in using the extremity, for example: the adductors of the thigh, the hamstrings and the posterior calf muscles. The motor nerves to all these muscles are easily accessible and as much as seems necessary may be resected, thus reducing the action of the group or com-

pletely paralyzing it if so desired. In this way the muscle balance between the opposing groups is balanced, deformities corrected and function restored to the limb. This nerve resection, combined with the usual procedures for the correction of fixed deformities such as tenotomies, arthrodesis, etc., is at present the most reliable means of improving these difficult cases.

The recent work of Royal and Hunter, in Australia, of resecting the grey rami connecting the motor nerves with the sympathetic system has so far not proved of practical value. The operative technique is somewhat difficult and the results uncertain. Some men have reported satisfactory results, but the majority have been disappointing.

A careful selection of cases must be made as not all cases of spastic paralysis are suitable for operative treatment. There are certain definite contraindications which must be recognized:

1. Impaired mentality. Many of these patients have so little normal brain tissue that they cannot stand or sit alone. They cannot talk, saliva drools from their mouths and one look is enough to tell you that they are hopeless idiots. The range all the way from this to a normal mentality, and it is often difficult to tell just where to draw the line. A safe working rule is that the older children should have at least a mentality of four years. The younger ones should be able to sit alone, to talk, and understand directions from the parents and to make definite intelligent and coordinated movements. It is often well, if there is a doubt as to the mental condition, to defer operative treatment for one or more years.

2. Extreme rigidity of all the muscle groups without ability to perform any purposeful motions. This is often seen in hemiplegias with good mentality.

3. Extreme ataxia and incoordination involving all the muscle groups of the extremity.

It must be borne in mind that the purpose of a nerve resection is to so reduce the

stimuli to one group of muscles that they will not overbalance their antagonists. It is useless to expect results if these antagonists are themselves so rigid that they cannot relax for any voluntary motion or are so ataxic that they cannot be controlled.

The ideal cases are those in which the muscles are relaxed when the child is at rest, but in which on attempts at voluntary movement the stronger muscle groups draw the limbs into positions which mechanically interfere with function. Such conditions are the crossing of the thighs due to overaction of the adductors, or rising up on the toes from the pull of the tendo achilles.

Operative Technique of Nerve Resection.

- 1. Obturator nerve supplying the adductor muscles of the thigh.

This nerve makes its exit from the pelvis through the obturator foramen and divides immediately into two branches; the anterior, lying between the adductor longus and adductor brevis muscles supplies the adductor longus, the gracilis; the adductor brevis (usually) and pectineus (occasionally).

The posterior lying between the adductor brevis and the adductor magnus muscles supplies the obturator externus; the adductor magnus, and (when the muscle is not supplied by the anterior part of the nerve) the adductor brevis.

Both branches can easily be reached through an incision over the tendon of the adductor longus, beginning at the symphysis pubis and extending down one and one-half inches. It is not necessary to attack the nerve within the pelvis above Poupart's ligament as this approach adds considerably to the operative procedure. In the mild cases only the anterior branch needs to be resected; in the moderately severe and severer cases both anterior and posterior branches should be divided.

2. Branches of the Sciatic Nerve to the Hamstring Muscles.

These are reached through an incision in the midline on the posterior surface of the

thigh beginning just below the gluteal fold and extending downward for three inches. The branches come off from a common trunk lying on the inner side of the sciatic nerve. The larger group goes directly into the internal hamstrings and the smaller crosses under the main nerve trunk to supply the outer hamstrings. Only the inner group should be resected as complete paralysis of all these muscles frequently results in a genu recurvatum. And besides if the external group are retained they help rotate the thigh outward and correct the internal rotary deformity which is so common.

3. Branches of the Internal Popliteal Nerve to the Calf Muscles.

The muscles in this group which give trouble are the gastrocnemius, inner and outer heads; the soleus and the tibialis posticus. All are supplied by branches of the internal popliteal coming off in and just below the popliteal space. The nerve is exposed through a three-inch incision, being careful not to confuse it with the external popliteal nerve which often lies very close to it. The first branch is a sensory branch and should not be disturbed; the next two supply the inner and outer heads of the gastrocnemius and should be completely resected in most cases. The third branch is to the soleus. About one-half of this is resected. If there is marked inversion of the foot one-half of the branch to the tibialis posticus is taken.

4. Branches of the Median Nerve to the Flexors Muscles of the Hand and Wrist.

The median nerve is exposed in the bend of the elbow by a two-inch incision, the first branch comes off on the medial side and supplies the pronator radii teres. This is completely resected. The next branch supplies the flexor carpi radialis and flexor sublimus digitorum. This is usually completely resected leaving the branches to the flexor profundus digitorum intact. It is well to always use electrodes to stimulate and identify these branches as there is often irregularity in the way they are given off.

5. Deep Branch of the Ulnar Nerve to the Adductor Muscles of the Thumb.

The deep branch of the ulnar nerve supplying the adductor muscles of the thumb is reached through an incision on the ulnar side of the palm just below the hook of the cuneiform bone. The deep branch is divided as far toward the thumb as possible preserving the branches to the hypothenar group and to as many of the interossei and lumbricales as possible.

It is well at first to use electrical stimuli to identify all nerve branches. Later this may be unnecessary in the leg. It is always in the arm.

Operations for the Correction of Structural Deformities.—It is often necessary to combine with the nerve resections operations upon the bones and tendons for the correction of fixed structural deformities.

HIP—Tenotomy of the adductor tendons is occasionally necessary.

Extreme internal rotations of the femur are best corrected by an osteotomy of the femur just above the knee. One is tempted to do a subtrochanteric osteotomy. But experience has shown that it is difficult to hold the position of the short upper fragment and that angulation with shortening is liable to occur.

KNEE—Tenotomy of the tensor fascia femoris and lengthening of the hamstring tendons is often necessary in severe flexion contractures. Osteotomy of the femur may also be necessary. A large number of flexion contractures can be straightened without an operation by special apparatus for extension of the knee.

FOOT—It is advisable to lengthen the tendo achilles in all cases where there is any tendency toward fixed contractures. This is particularly true in the older cases. It assures a heel which will stay on the floor and allows you to leave more of the nerve supply to the calf intact. Arthrodesis to correct fixed equino varus is frequently necessary.

WIRST—Arthrodesis or partial resection of the wrist is occasionally necessary to correct the extreme deformities of the

hand, when the shape of the carpal bones has been changed by growth in the deformed position.

RESULTS—The following table of results is based upon a study of 48 cases personally operated upon and followed for from six months to three years. It is difficult to determine the actual amount of benefit in these cases under six months.

HEMIPLEGIAS

Arm: 12 operations.

Excellent, 4.

Satisfactory, 3.

Poor, 5.

Leg: 17 operations.

Excellent, 7.

Satisfactory, 8.

Poor, 2.

The poor results were in cases with considerable rigidity in all groups of muscles.

General spastic paralysis, including the quadriplegias and diplegias.

Excellent, 9.

Satisfactory, 12.

Poor, 3.

Died, 1.

CONCLUSION—Resection of the peripheral motor nerves combined with other operations for the correction of fixed structural deformities is at present the most satisfactory procedure in the treatment of spastic cerebral paralysis. Sufficient improvement can be expected in properly selected cases to make the operation advisable.

DISCUSSION

DR. R. W. BILLINGTON (Nashville): These cases always attract a lot of attention and many times are very pitiful cases, and frequently they do not get any encouragement from their friends or even their family physician that anything can be done for them. Dr. Speed has outlined the type of case which gives the best results with proper treatment and it is not necessary to go into that again. There is, however, much that can be done for most of these patients who have enough mentality to co-operate in the treatment. The object of any operative treatment on the extremities is to cure deformity and remove mechanical obstruction to locomotion in the form of contractures and deformities, and to balance the power in the opposing groups of muscles. As

Dr. Speed said, the muscles are all acting together instead of in relation to each other, and naturally if all activate at once the stronger will out-pull the weaker and the result is the condition we are all familiar with. I feel that we have had enough experience now with the various methods that are and have been used to get at a fairly definite basis as to what is the best procedure. That is, the resection of the posterior spinal nerve roots has been largely discarded. The decompression method of Sharp of New York has not turned out well and is being used very little. Now it comes down to the work on the extremities. The partial resection of the nerves to the individual muscular branches, as Dr. Speed has said, is very useful. However, I feel that we should not lay too much emphasis on that and create the impression that the tendon operations should be discarded, even where there is no organic contraction. If there is organic contraction the tendon must be lengthened to let the heel come down, so that the patient can stand in the normal erect position with the heels on the floor and the knees straight, before we can really do anything. In the cases where the contraction is not well marked I think the tendon lengthening in many cases will give just as good results as the nerve operations. I have a patient now under observation, a child of seven, who had never walked. He was brought to me unable to stand or walk alone and in this child we did the tendon lengthenings, did not do a nerve operation, corrected the deformities, weakened the over-acting groups of tendons, and the patient is now walking alone and is now making a very satisfactory improvement. If we had done a nerve operation we would have been very enthusiastic about that. The nerve operation destroys the nerve supply to the muscle and the tendon operation does not. At times in doing the tendon and the nerve operation as well we may do too much. It is largely a matter of guesswork as to how much to do. If one does too much in the tendon operation he can re-operate and shorten up the tendon, but in the nerve operation this cannot be done.

I think we should not discard the tendon operation altogether in favor of the nerve operation. A great deal can be accomplished in these cases, and I wish to congratulate Dr. Speed on his work.

DR. JAMES S. SPEED, Memphis (closing): I wish to emphasize the importance of combining various other orthopedic operations with the nerve resection as it is the intelligent combination of these which gives the best result. We cannot get permanent results as a general thing by working on the tendons and bones alone, and we cannot get correction of fixed structural deformities by simple nerve resection.

I wish to thank the society for its attention to this paper, and Doctor Billington for his excellent discussion.

HAND INFECTIONS*

L. MILLER WOODSON, M.D., Gallatin, Tenn.

IT is not my purpose to discuss all the pathological conditions to which the hand is exposed but rather to emphasize certain surgical principles suggested by the anatomy of the hand which have a most important bearing upon the conservation of function.

The hand as an atomical unit offers a most interesting study. It has been trained through an age old struggle to minister not only to man's physical needs but to express his varied emotions in color, form and sound. It is the chief tool by which man earns his daily bread. His conservation of its varied functions must, therefore, be planned with the utmost care and when surgery is necessary, it is to be applied with a due regard to its effect upon ultimate function.

CAUSE—The most trivial abrasion is the wound that bleeds but little and is wholly disregarded or re-infected by self treatment with non-sterile materials. Many of the cases follow pricks from needles, pins, nails, glass, crockery, splinters, trauma and other materials that carry infection more or less deeply and just as effectively as if deliberately inoculated with a hypodermic syringe. Deeper, longer and more or less gaping wounds that bleed freely are far less likely to cause infections than the preceding ones mentioned.

Kanavel's work on infections of the hand contains a rational and simple description of probable channels of infection with which you are all acquainted. The infections are ordinarily of staphylococcus type, sometimes streptococci, or both types mixed infections.

In staphylococci infection the point of in-

fection seems to be more centralized, the pus is thicker and yellower in color. Where in the streptococci infections the infection is more general and the pus is not so thick and yellow.

Then on infection of the hand, pus may give rise to superficial and deep infection. In superficial we have Felons, Paronychia, Subepithelial Abscesses, Carbuncles, Collar Button Abscesses, Thena and Hypothena Space Abscesses.

DEEP — Lymphangitis, Teno-synovitis, Fascial space infections, Dorsal Subcutaneous, Dorsal Subaponeurotic, Hypothena, Thena, Middle Palmer Webb Space. I merely give you these two classifications and you see it would be very hard to make a definite diagnosis with a large, swollen and congested hand.

I would like to call your attention to one class of deep infection, Lymphangitis Lymphadenitis, because we find our infections beginning to extend by wrist, forearm, and arm to axilla. The lymphatics in the hand take the shortest route to the back of the hand, hence redness and swelling of the dorsum should always lead to investigation of the palm for the point of focal infection. Kanavel says that seventy-five per cent of hands treated show improper and unnecessary incision on the dorsum. I come under this class, but I hope none of you do.

Lymphatic extension from little and ring fingers takes place through the epitrochlear glands and thence to the axillary glands. Extension from the thumb and forefinger go to the axillary glands without interposition of the epitrochlear glands. Extension from the middle finger may involve either the axillary or epitrochlear glands. In some cases the lymphatic vessels pass over the clavicle into the sub-cla-

*Read before the Association of Railroad Surgeons, Section Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

vical glands and thus directly into the circulation.

It is obvious from this lymphatic arrangement that infections of the thumb, index finger and middle finger have a more important relation to general systemic infections than those arising in the little and ring fingers. The usual signs of systemic infections often occur as malaise, headache, fever, thirst, restlessness, oftentimes chills and considerable prostration. When infections reach the palmer bursal or middle space and extend to the forearm disabling incisions will be avoided if it is remembered that pus passing from the palm to the forearm always travels toward a certain space first described by Parona and of considerable surgical importance, Parona's space. There is a large space in the lower part of the forearm about two inches above the wrist, situated between the Pronata Quadratus and the deeper flexor tendons in direct continuity with the tendon sheaths and middle Palmer space. Kanavel has shown that if pus ruptured from the synovial sheaths or passed from the middle Palmer space it would enter this area. It is most accessible on the ulnar side and it is at this point that drainage is instituted. An infected hand is often cured at the price of a useless hand. Properly planned incisions drain the parts without compromising function.

Think twice before making an incision in the hand. Observe the surgical significance of the flexure folds of the hand. To make a scar at right angles through a flexure fold is to inflict a severe functional handicap. Lateral incisions should be employed to avoid scar tissue over the tactile portion of the finger leaving the part over the articulation uncut to prevent prolapse of the tendon. In incision of the hand the teaching of Kanavel should be closely followed. Palm infections make incisions at base of index and middle finger. At base of little finger, extend to outer side of palm. Thumb, base of second joint to base of third joint in palm. These incisions should be made early and if very

much swelling on dorsum or back of hand, should have a through and through incision, from palm to dorsum with rubber tube drainage. I have gotten better results and saved time when this was done.

When it reaches palmer bursae or middle palmer space and extends into forearm, drain Parona's space, which is easily accomplished by selecting a point one and one-half inches above the tip of the ulna and making an incision directly down on the flexor surface of the bone. An artery clamp is thrust across the flexor surface of this bone and the radius until it impinges on the skin of the radial side where the knife cuts down upon it. The incisions in the skin are now enlarged to the length of one and one-half inches and the artery forceps open the subcutaneous area to the same extent.

It is said that this space may hold a half pint of fluid. This is the most practical drainage site for infections extending from the palm to the forearm. It provides the best drainage with the least damage to structure.

In all cases of hand infection a good rule is to give the Tetanus antitoxin, 1500 immunizing units. We make this a rule. As to other vaccines, I have used with success Bacterial Vaccine of Staphylococcus Aureus and Albus. Of course if we have a streptococci infection, why we use the combined staphylococcus and streptococci.

In closing, I would call your attention to the hand at rest. More functional disability of the hand results from faulty position of immobilization than results from the injury itself. Rest can only be obtained when the muscles are in a state of equilibrium and according to Hilton's law, muscle rest implies nerve and joint rest. No rest is attainable at any time in a position in which any group of muscles is put upon a tension to which these muscles do not attain in a normal resting position. The hand at rest is the hand in pronation, with the fingers partially flexed. Such a position as the hand naturally assumes in a state of quiescence whenever immobiliza-

tion of the hand is required, this is the ideal position to insure the patient comfort of functional disability.

DISCUSSION

DR. DUNCAN EVE, JR., (Nashville): The subject of hand infection is like all other conditions—namely: We have to make early diagnosis because we are all guilty of having this type of patients come to the office, where we advise a little heat or a poultice, and we get into trouble. No doubt the primary thing should be drainage, and when they are in an advanced stage we should give a general anaesthetic so as to get free drainage. Dr. Woodson is absolutely right about making the incision on the lateral side and getting free drainage. He is also right about the type of infection usually being staphylococcus and we can open up freely and drain, with use of solutions. The hand should be kept immobilized. In the type with severe infection, with chills and fever, we treat in two days: we always put the patient to bed, always give large doses of castor oil, and then we place on thirty or forty layers

of gauze, use either the Ochsner solution, which is aqueous saturated solution of boric acid seventy-five per cent, and alcohol twenty-five per cent or that recommended by Moorehead of New York, which consists of iodine one dram to pint of saline. I think it does not make a great difference which is used because the main thing is heat and rest. It is remarkable to see these patients come in with high temperature and a high leukocyte count and have them in practically normal condition within a few days under this treatment. If you cannot find the point of location just at first, go back as you do in a fracture and by taking a few minutes find the point of localized tenderness and open.

DR. J. M. CLACK (Rockwood): It seems that all has been said about this subject. It is a question of drainage and thorough drainage cannot be accomplished without a general anesthetic. The point Dr. Eve, Jr., brought out about us being guilty of the partial opening and not enough drainage was a good one. Those patients may call us up some time after such treatment and complain of the pain, and we should operate them properly and place abundant drainage in the beginning.

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Devoted to the Interests of the Medical Profession of Tennessee

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J. F. GALLAGHER, M.D. -----Editor

R. C. DERIVAUX, M.D. -----Associate Editor

AUGUST, 1925

EDITORIAL

VANDERBILT SCHOOL OF MEDICINE.

The opening of the new Vanderbilt Hospital and the School of Medicine marks an epoch in medical education, not only in Nashville and Tennessee but in the entire South. After several years of thought and study, and an investigation of hospitals and teaching plants in this country and in Europe, plans were finally completed and work was begun on the present plant about two years ago. The plant and equipment represent an outlay of approximately \$3,000,000.00.

Those who have inspected the building are impressed with its magnitude and its substantial construction; with the almost perfect correlation between the laboratory and clinical departments. This feature is also carried out in the relation between the out-patient department and the wards in the hospital. The Hospital and Medical School are equipped in a most complete—one might almost say elaborate—fashion down to the smallest detail.

It would require a volume to describe the plant and then perhaps justice would not be done, so the faculty will hold open house on October 8, to the medical profession. Special invitations will be sent to the members of the Tennessee State Medical Association to inspect the plant, which is now in full operation.

The new Vanderbilt Hospital and Medical School will ever stand as a monument to its benefactors who made the enterprise possible and to the men who conceived and executed the plans.

DEATHS

Dr. George H. Savage of Memphis, aged forty-nine, died July 30th. Dr. Savage was a well known Eye, Ear and Throat specialist and a graduate of Vanderbilt University School of Medicine in the class of 1898.

Dr. L. W. Williams of Winchester, aged 64, died August 18th. Dr. Williams was a graduate of Vanderbilt University School of Medicine in the class of 1889.

NEWS NOTES AND COMMENT

The Madison County Medical Society held their annual barbecue August 14th.

Contract has been let for a sixteen story professional building in Nashville. The cost will be approximately \$2,000,000.

Dr. A. G. Nichol of Nashville has returned from a cruise of the Gulf of Mexico, touching on the ports of Havana, Christobal and Limon. From the latter two ports tours were made into the interior of Panama and Costa Rica.

MEDICAL SOCIETIES

The Honorable Sam A. Baker, Governor of Missouri, has extended through the Governor of Tennessee, Honorable Austin Peay, an invitation on behalf of the State of Missouri to the medical profession of Tennessee to attend the annual meeting of the American Health Association which will be held in St. Louis, October 19-22.

The Middle Tennessee Medical Association will meet in Fayetteville on November 12 and 13. The officers of the association for the coming meeting are Dr. J. M. Lee, president; Dr. W. S. Rude, vice-president, and Dr. Sam P. Bailey, secretary-treasurer.

THE DALLAS SESSION OF THE A.M.A.

The Board of Trustees of the American Medical Association has unanimously decided on April 19-23, 1926, as the date for the Seventy-Seventh Annual Session of the Association, to be held in Dallas, Texas.—
Jour. A. M. A., Aug. 8, 1925.

THE SOUTHERN MEDICAL ASSOCIATION MEETING.

The various committees appointed in connection with the meeting of the Southern Medical Association in Dallas November 9th, 1925, report very satisfactory progress.

It is especially gratifying to know that the hotel committee has already succeeded in having reserved for guests more than 1,600 rooms in the leading and best hotels of Dallas. This insures you that no matter how great the attendance, each one will be comfortably and suitably provided with proper hotel accommodations. This settles a question which has not concerned the doctors of Dallas, who are acquainted with local facilities, but which has been raised by prospective visitors.

For the first time in its history, the Association will have all its activities housed in one building. The new educational building of the First Baptist Church on the corner of St. Paul and San Jacinto streets will be completed long before November and will have a sufficient number of assembly halls for the various section meetings. The large auditorium with its splendid acoustics gives ample room for all general sessions and the basement floor, easily accessible, will give more than enough room for all exhibits, commercial and scientific.

In connection with the association's meeting in November, clinics in all branches will be conducted in all Dallas' splendid hospitals, which contribute largely to its rank as a medical center of the Southwest. The bed capacity in the larger hospitals alone is in excess of 1,200. Over \$8,000,000.00 has been invested in the hospital facilities; below is given some

data on the different institutions located in the city.

BAYLOR HOSPITAL AND MEDICAL SCHOOL.

The Baptist Memorial Sanitarium was opened in 1909, being enlarged in 1922 and the name changed to Baylor Hospital. It is the largest sanitarium in the city, having a capacity of 432 beds. One hundred graduate nurses and one hundred and sixty-five training nurses are employed.

The capital invested is in excess of \$3,000,000, the hospital being operated by the Baptist denominations of Texas.

While the main plant of the Baylor University is located at Waco the schools of Dentistry, Nursing, Medicine and Pharmacy are in Dallas. The enrollment is in the neighborhood of 1,000. The Medical Department will be in session during the S. M. A. meeting, and all its clinics open to visiting physicians.

ST. PAUL'S SANITARIUM.

This hospital was established in 1896. The original capacity was 210 beds, but an addition built in 1916 increased the capacity to 300 beds. Two hundred and fifty nurses are employed in the sanitarium. A nurses' training school is operated by the Daughters of Charity of St. Vincent de Paul, who are also in charge of the management of the main sanitarium. Investments in building and grounds are placed at \$1,750,000.00.

DALLAS SANITARIUM.

The first bed unit of this hospital is now under construction and will cost \$500,000. When completed the hospital will contain 500 beds and represent an investment of more than \$1,250,000. It was established and will be operated by the North Texas Methodist Conference.

PARKLAND HOSPITAL.

This 250 bed hospital is operated by the City-County Board. It was established in 1896. Ten graduate nurses and seventy-two nurses in training are employed. It is estimated that the capital invested is in the neighborhood of \$1,000,000. Dr. Lane V. Cooke is the super-

intendent. A nurses' training school is operated in conjunction with the hospital. At the present time plans are being made to enlarge the school to take care of one hundred students.

FREEMAN MEMORIAL CLINIC.

This free clinic was first established in the basement of the First Presbyterian Church, in 1921. In 1924 the clinic was endowed by T. R. Freeman and a beautiful building was erected as a memorial to his wife and son. The clinic is absolutely free and handles an ever growing number of patients. The building, together with the equipment, is valued at \$100,000.

HELLA TEMPLE CHILDREN'S HOSPITAL.

Established in 1923 by Hella Temple for the treatment of crippled children. It contains 50 beds and employs five registered nurses, fourteen attendant nurses and twelve other employees. It is supported jointly by Hella Temple and the Scottish Rite bodies.

The Timberlawn Sanitarium is a forty bed hospital employing eighteen nurses and treating nervous and mental diseases. It is located on the Orphans Home road and represents an investment of \$75,000.

MEDICAL ARTS BUILDING.

The story of Dallas as a medical center would not be complete without some mention of this nineteen story skyscraper, completed in 1924 at a cost of \$1,500,000. It was designed for and is occupied by the medical and dental professions. It is of Gothic Cross design, assuring both light and ventilation to every office. At the time the building was erected it was the tallest monolithic concrete building in the world. About 60,000 patients visit this building every month.

The medical profession of Dallas and of Texas warmly invite the Southern doctor and his wife to visit Dallas on November 9, 1925.

Curtice Rosser, M.D.
For the Publicity Committee.

MISCELLANEOUS

RADIUM TREATMENT OF CARCINOMA OF THE CERVIX UTERI.

George Gray Ward and Lilian K. P. Farrar, New York (Journal A. M. A., July 18, 1925), believe that the initial dose of radium should be a test dose to ascertain the reaction of the malignant growth and of the normal tissues to radium activity. It has been their aim to give only a dosage sufficient to inhibit the tumor growth and to produce scar tissue in the cervix and adjacent structures. It is by this production of dense scar tissue that the blood vessels are occluded and the cancer cells starved and isolated. The surgeon himself should be acquainted with the clinical progress of the reaction to radium going on in the cervix. Regular monthly visits on the part of the patient and personal inspection by the surgeon himself are absolutely necessary to check the renewed activity of the malignant growth in its incipience by subsequent radium treatment. The authors also believe that, if they succeed in arresting the progress of the disease by inhibiting the growth and walling in and imprisoning the cancer cells in cicatricial connective tissue, they are exposing the patient to a greater risk in opening up these barriers by the necessary trauma incident to a hysterectomy, and feel that they may do better for their patients if they rely on radium alone in view of their own statistics and those reported by other clinics. It is of interest to note that in the series of 196 cases treated we found that carcinoma developed in the cervical stump left after a previous supravaginal hysterectomy in nine cases. There were three deaths among the 181 patients treated by radium alone, or a mortality of 1.6 per cent. Five patients were refused radium treatment on account of evidence of distinct metastasis and marked cachexia. These, with the 196, make 201 cases. Of these, forty-eight were Classes 1 and 2, giving an operability of 23.8 per

cent. Nine patients had thirteen recto-vaginal or vesicovaginal fistulas at some time following radium treatment. Two of these fistulas have healed, leaving eleven permanent fistulas, either as the immediate result of radium or from the extension of the carcinomatous growth, an incidence of five per cent. In the series of cases of primary carcinoma treated with radium alone, there were fifty-eight patients of all four classes living three years or longer, or 43.6 per cent. In the primary carcinoma treated with radium and operation, there were twelve. In the secondary cases treated with radium, no patient was living three years; so the combined total percentage for primary and secondary carcinoma of the cervix, or all classes treated with radium, or operation and radium living three years or longer, is 44.8 per cent. In the series of cases of primary carcinoma of the cervix treated with radium alone, there were seventeen patients of all four classes living five years or longer, or 23.6 per cent. In the cases of primary carcinoma treated by radium and operation, there were four patients living five years or longer, or 57.1 per cent. No patient with secondary carcinoma lived five years. The combined total percentage for patients with primary and secondary carcinoma of the cervix of all classes treated with radium or operation and radium living five years or longer is 25.9.

LAWLESS LAW ENFORCEMENT.

Recently the collector of internal revenue at Nashville refused to register under the Harrison Narcotic Act twenty-five physicians who were under indictment for alleged violations of it. In 1922 a court of competent jurisdiction decided that a collector had no right to refuse registration under such circumstances, and the Bureau of Internal Revenue took no appeal from that decision. At that time the United States District Court for the Northern District of Georgia* thus disposed of the collector's claims:

But to prohibit a practicing physician from prescribing narcotics unless he registers, and then to refuse to register him, would, to that extent, be to prohibit and regulate his practice of medicine, a thing within the province of the state, and not of the United States, and in contradiction of the revenue purposes of the act. . . . The determination of who may properly practice medicine or otherwise dispense drugs belongs to the agencies of the state. The collector must register on proper application all who are by the state law permitted to dispense them. He has no discretion in the matter.

In the present instance, the United States District Court of Nashville promptly arrived at a similar conclusion and directed the collector to register the Tennessee physicians. For the trouble, expense and undesirable publicity incident to the court proceedings, however, these physicians have no redress. Available reports do not disclose the nature of the offenses with which they were charged, the character of the evidence on which they were indicted or their professional standing. Their guilt or innocence can and should be promptly settled in an orderly course of judicial procedure. If they are convicted, lawful penalties can be enforced. But as was made perfectly clear by the court in the Starnes case cited, and as should have been known to the collector of internal revenue at Nashville, these matters have nothing to do with registration under the Harrison Narcotic Act. Referring to an order issued by the Commissioner of Internal Revenue to withhold registration from indicted or convicted persons, in that case the court said:

The instruction of July 26, 1921, was not made by "the Commissioner of Internal Revenue with the approval of the Secretary of the Treasury," and so (was) not authorized by the act; but if it were, in attempting to make a pending charge of crime a ground for refusing registration, it would be unsustainable. Even after the conviction, to do so would add a deprivation of vocation to the punishment fixed by law. Prior to conviction there is only an accusation of which the registrant is presumed to be innocent.

The decisions of the courts in the Georgia and Tennessee cases do not leave collectors of internal revenue helpless.

They merely refer them back from lawless methods to lawful ones. If a collector has evidence that a physician has violated the Harrison Narcotic Act or the narcotic act of any state, he can institute prosecution in the proper federal or state courts. If a collector has evidence that a physician is unfit to practice medicine, he can file complaint with the licensing board of the state by which that physician was licensed. If the collector regards these measures as inadequate, he can appeal through proper channels, to the proper legislative bodies to amend or supplement the Harrison Narcotic Act or the medical practice or narcotic acts of the state.

The law, however, does not authorize a collector to use his own judgment to remedy what he may regard as defects in federal and state legislation. Such a procedure is not merely a trespass on the rights of the physician; it is an attempt unlawfully to infringe on the constitutional rights of the state itself. Such occurrences tend to break down the harmonious relations between the Federal government and the states and to increase the odium already attached to the word "bureaucracy." The Harrison act penalizes the physician who fails to conform; what redress does it offer him when he loses time, money or professional standing through the misguided autocratic methods of those whom the government selects to enforce it?—*Jour. A. M. A.*, Aug. 29, 1925.

**Starnes v. Rose*, Internal Revenue Collector, 282 Federal Reporter, 336.

AMERICAN BOARD OF OTOLARYNGOLOGY.

The next examination given by the American Board of Otolaryngology will be held at the Cook County Hospital, Chicago, on October 19th, 1925. Application should be made to the Secretary, Dr. H. W. Loeb, 1402 South Grand Boulevard, St. Louis, Missouri.

BOOKS RECEIVED

DIAGNOSIS OF CHILDREN'S DISEASES WITH SPECIAL ATTENTION TO DISEASES OF INFANCY. By Prof. Dr. E. Feer, Director of University of Children's Clinic, Zurich, Switzerland. Illustrated 551 Pages. I. B. Lippincott Co., Philadelphia and London. Cloth \$7.00.

This work confines itself entirely to diagnosis of diseases of children, with special attention given to the ills of the new born and of infancy.

As a whole it is an excellent book, as the presentation is different from most textbooks of children's diseases, in that it approaches the subject from an entirely different angle in a way that enables the reader to grasp the most important symptoms and physical signs without reading over a great deal of unnecessary material.

The text is profusely illustrated with many excellent pictures which is quite an improvement over the many textbooks on pediatrics.

It is to be recommended to the pediatricist as well as to the general practitioner.

M. S. L.

THE TREATMENT OF KIDNEY DISEASES AND OF HIGH BLOOD PRESSURE. Part 1. Practical Manual For Physicians and Patients. By Frederick M. Allen, M.D., Director of the Physiatric Institute, Morristown, N. J. Cloth. Pp. 206. Newark, N. J.: Newark Printing Co., 1925.

This book aims to present the subject of renal vascular disease in simple form for practicing physicians. The primary topic, that of treatment, is approached directly, and recipes and menus are included with the view that it may be placed in the hands of the patient as a manual for the guidance of home treatment. Special emphasis has been placed on the salt free diet for the treatment of high blood pressure and edema and suggested for a number of other conditions as hyperchlorhydria, diarrhea, diabetes insipidus, and enuresis. Dr. Allen is of the opinion that the morbidity and mortality from renal vascular disease would be lower if the general consumption of protein and especially salt were restricted. The theme and motive of the work may be summarized as follows: the renal vascular diseases constitute one of the leading present day medical problems; the disturbances involved are essentially three, namely, nitrogen retention, edema, and hypertention; the remedies for these are two, namely, protein restriction and sodium chloride restriction.

S. R. B.

ALLERGY ASTHMA, HAY FEVER, URTICARIA, AND ALLIED MANIFESTATIONS OF REACTION. By William W. Duke, Ph.B., M.D., Kansas City, Mo. Cloth. Pp. 339, with 75 illustrations. Price \$5.50. St. Louis, Mo.: C. V. Mosby Co., 1925.

Dr. Duke has included in this book much of his clinical experience drawn from over five hundred cases seen during the past twelve years; he has taken the experimental side of the subject from the work of Zinsser and of Coca. "To the reader who may believe that the chapters which

follow seem strange, sensational, complex, or obscure, I may say that few subjects known to medicine seem stranger. . . . After all the subject could hardly appear more strange than studies in bacteriology or immunity must have seemed in the early days of their development." Of particular interest is the second part which is devoted to reactions caused specifically by physical agents, heat, cold, light, etc. The book is well illustrated and has an extensive bibliography of twenty-seven pages.

S. P. B.

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OBSERVATIONS OF SOME OF THE SURGICAL CLINICS OF THE CONTINENT AND NOTES ON THE BRITISH MEDICAL ASSOCIATION*

By WM. D. HAGGARD, M.D., M.D., F.A.C.S., Nashville, Tennessee.

EIGHTEEN of the members of the Clinical Surgical Society, comprising an active membership of forty made their third European pilgrimage in June and July under the presidency of Dr. Chas. H. Peck. The first clinics attended were in Rome. In the Eternal City is the Royal University of Rome, having nine hundred students and graduating about one hundred and fifty students a year. The course is six years, with thirteen years of preparation, of which five are in the primary grades, five in the secondary, and three years in the study of the classics. This graduates men at between twenty-three and twenty-five, and seems to be very satisfactory.

The Polyclinico, where all the clinical teaching is done, is the chief hospital in Rome. It contains thirteen hundred beds, of which about half are devoted to the University Clinic. Professor Allesandri is the chief. He is a splendid Roman, fifty-four, and a very brilliant and resourceful surgeon. The amphitheater is separated from the visitors' seats by glass partitions. The technic is exquisite and elaborate. Many of the abdominal operations are done

under spinal anesthesia with 2 c.c. of 2 per cent solution of tulocain, a Bayer product. The high lumbar puncture is made for the upper abdominal operations and the low for the pelvic operations and those upon the extremities. The analgesia is very satisfactory. Two grains of caffeine are given hypodermically before the spinal puncture and this is repeated should there be a fall in blood pressure, which seems not unusual, somewhat alarming, but rather transitory. They have had no deaths attributable to the anesthesia and are very well satisfied with it.

While I was seeing spinal anesthesia in Italy, Drs. Floyd and Crutchfield did three gall bladder operations here under splanchnic anesthesia successfully.

We saw on two successive days three hydatid cysts of the liver operated upon. The first was a tumor the size of one's fist that was visible and palpable and particularly clear in the pneumoperitoneum x-ray. The frequency of hydatid cyst is accounted for by the great abundance of lower animals living near and with some of the people. The solitary cyst was aspirated and a quart or more of white fluid evacuated. The sac was then opened and its

*Read before the Nashville Academy of Medicine, Sept. 15, 1925.

inner lining caught with forceps and it was gently, easily and quickly drawn out in its entirety, leaving the external covering adherent to the liver, and no bleeding resulted. The sac was wiped out with 1 per cent solution of formalin and pads wrung out in this solution were packed around the field of operation. The sac was then closed up tightly, the entire operation comprising twenty minutes.

Vaccination against pulmonary infections had been done as a routine in about eighty-five cases, apparently with good results. It would seem that if all surgeons would be more particular about acute, even though mild, respiratory infections and would literally wait from ten days to two weeks before operations, although the patient had to be sent home, as practiced by Densmore in Crile's Clinic, we would have the same striking absence of infections that have been noted here. Terry of San Francisco has advocated a very thorough plan of mouth cleansing to prevent aspiration pneumonia. In addition to the stomach work of Allesandri, to be spoken of later, a striking case was a Mikulicz resection of a giant colon as large as one's arm in a girl of eighteen, in which both ends were temporarily ligatured before resection and most of the abdominal wall closed. There apparently had been a stricture for which a plastic operation on the sigmoid had been done two months previously without relief.

A left calculus pyonephrosis with stone was removed also under spinal anesthesia, the cautery being used to sever the uterine. This was accomplished through the oblique lumbar incision with a gauze drain. It will be remembered that Nitche of London makes a long inguinal incision for complete ureterectomy when the kidney is removed, especially for tuberculosis.

Bastianelli, also of Rome, perhaps is best known to Americans. He has a private hospital of about eighty beds attached to his clinic, very modern, just outside of the old Roman wall. He did a number of gall bladder operations with very satisfactory technic, paying particular attention to allowing the clamp on the cystic artery to pro-

trude at least half way of its length beyond the duct, so that the tying could be very easy and very much safer.

In cancer of the rectum he felt that the sphincter could be saved more frequently than formerly, especially in women. Where the sphincter cannot be preserved, Bastianelli prefers to make the anus as near the natural opening as possible. When the sphincter is saved, the anal mucous membrane is separated as in a Whitehead operation. The sphincter is severed posteriorly to give more space. The tumor is then removed up as high as the peritoneum and the end of the bowel pulled down and sewed to the levator anal muscle and finally at the skin juncture, allowing at least two fingers' breadth to protrude through the anus when the sphincter is resutured behind. He always precedes the operation by cecostomy eight or ten days before and makes a general abdominal exploration at the time, noting also the length of the sigmoid. The cecostomy must be complete so that all the feces can escape.

American surgeons are not convinced that preservation of the sphincter gives as thorough a removal and as good outlook for permanent cure as the permanent inguinal colostomy followed by a Kraske at a second sitting.

The most beautiful technic we saw anywhere in Europe was at the Orthopedic Clinic of Professor Putti at Bologna. He is an artist to his finger tips, not in the ordinary sense, but in the sense that Michael Angelo was with his chisel. Putti, too, used chisels of special curves with great dexterity in an arthroplasty of the knee where ankylosis had occurred from general sepsis. A circular incision was made with convexity up above the patella and its tendon cut obliquely from before, backward and downward, to give a larger and firmer line of suture than in the division with end to end suture. The joint was opened with the least possible amount of trauma and the lower end of the femur gently rasped smooth with a horse-shoer's file. A smooth shepherd's crook retractor in the intercondyloid notch held the femur up

with ease. The incision for the fascia lata had the towels fixed in apposition before the actual incision was made to prevent contamination. A large piece was removed bodily and placed between the ends of the bones and sutured in a hinge fashion. The fitting was of the greatest nicety and the sutures few. Operating under the tourniquet adds to the semblance of art as practiced on marble, but every other feature of the technic was equally finessed. The immaculateness of the linen, gowns and caps was as though they had been freshly ironed and the operating theater and every appurtenance was of the most perfected character. A ship's clock was attached to the anesthetist's table by an arm. All the instruments were made by the special shops attached to the hospital, which employs nearly one hundred men for the making of appliances, not only for this hospital, but for others throughout the peninsula who require corrective apparatus. Many post-operative cases of arthroplasty were shown, in which it was impossible to tell which had been the stiff knee as the patient walked.

The hospital had been an old monastery built in the eleventh century. It had been bought by a fund left by a surgeon, Rizzoli, and added to by returns from the hospital, making it the most artistic and perfectly equipped hospital that we saw. A picture of the library with its wonderful friezes and old paintings of the monks which were on the walls that had been restored, gave one an impression of an art gallery. Professor Putti is the chief of the hospital, having been assistant chief for nine years.

Bologna was one of the earliest schools of anatomy and the site of the old university with its dissecting amphitheater where Vesalius and the old anatomists taught was very inspiring.

GOITER.

In Switzerland and the Austrian Tyrol goiter is endemic. The early belief that it is largely due to the deficiency of iodine in the drinking water has been borne out and generally accepted. At one time some

doubt was cast upon this theory by the work of McGarrison, an English army surgeon, who found micro-organisms in certain springs that were notoriously productive of goiter. The explanation may be that it was lacking in iodine although abounding in micro-organisms. It is well known that the water of certain springs in Switzerland produced goiter with such regularity that men drank from these springs to escape army service.

There are a great many cretins in Switzerland. So many that they have five government institutions for their care, numbering approximately one hundred and fifty each. Cretins are not simply deprived of the thyroid gland itself, but perhaps, as explained by De Quervain, who came from Basel to take charge of Kocher's old clinic at Berne, it may rather be a dysfunction of the thyroid, as has been experimentally produced in rats. The basal metabolic rate of the cretins average -8%, whereas ordinary goiter is either normal or -.6%. In cretins without goiter the rate is -11%, and in very bad cases it occasionally is -20% or -30%, whereas the average in exophthalmic goiter before operations is plus 35%. Cretins with goiter grow to a nearly normal height, but frequently are unable to talk intelligently, whereas cretins without goiter are little dwarfs but are usually able to talk. This is accounted for by the small persisting remnant of the thyroid.

Kocher years ago showed the danger of the administration of iodine to middle-aged persons with adenomatous thyroids. So many of them developed hyperthyroidism, presenting all the symptoms of exophthalmic goiter except the exophthalmus, that they called it "iodine-Basedow." This has been confirmed by many observers and it is computed that a considerable percentage of patients with adenoma, in middle age, to whom iodine is given for any length of time, will develop toxic symptoms. Iodine, of course, is extremely useful in the goiter of adolescence. It may also be given with profit to school children twice a year to prevent goiter. It is not nearly so useful after

twenty years of age and becomes increasingly dangerous with each decade. Plummer has in the last few years proven the efficacy of iodine administration for a short period before operation as a preparatory measure. Ten drops of compound tincture of iodine, Lugol's solution, in grape juice every night will within a week or ten days markedly decrease the basal metabolic rate. It is particularly noticeable in ameliorating the nervous and gastrointestinal symptoms of exophthalmic goiter. It is dangerous in exophthalmic goiter if given for any length of time. Iodine is extremely useful in reaction with thyro-toxic fever after operation for exophthalmic goiter and many cases can be rescued by its administration which without it would die. In the crisis of exophthalmic goiter with marked prostration, great vomiting, and temperature, with impending death, the patient can be almost regularly reclaimed if large doses of iodine are given, perhaps forty to one hundred drops daily for a few days. It is well known in the Tyrol that it is not useful as a routine treatment for goiter, the great majority of which are adenoma of the nodular type and is very prone to produce toxic symptoms which render that disease even more dangerous than frank exophthalmic goiter.

The technic for goiter operations in the Swiss clinics is very careful and deliberate. Each vessel or group of vessels in tissues is ligated separately and cut between ligatures. No hemostatic forceps are used to grasp the goiter tissue, except rarely. The curved right angle blunt-pointed ligature carrier is employed. De Quervain and Roux frequently tie the inferior thyroid separately and most expeditiously before beginning the enucleation. The removal of the gland is nearly always begun below instead of above, as we are accustomed to do.

Most of the operations are done under local anesthesia and sometimes para-vertebral anesthesia, one-half per cent novocain with one minim of adrenalin to each c.c, preceded by pantopon two hours before operation. Usually both lobes are removed,

except the upper part of the left lobe. There is no goiter in the Dolomite region of the Alps and it has been noticed that in our country no goiter develops in limestone regions, as they are the result of deep sea deposits and probably contain shells and iodine which are set free by erosion and are present in the drinking water; whereas in granite countries where there is no erosion there is little or no goiter.

Instead of the closing scissor-like type of artery forceps, they use almost universally the sliding type. Several of the operators and particularly those who had been to America, said they felt somewhat embarrassed about doing goiter work when Crile and Judd and Sistrunk were present.

THORACOPLASTY.

We were greatly interested in the cases of extensive thoracoplasty for pulmonary tuberculosis. The selected cases were those in which the opposite lung was good, the patient was young and in good condition, and had not been benefitted by employing nature's method of compressing the lung as in pleurisy with effusion by nitrogen gas. We saw examples of this in Ranzi's Clinic at Innsbruck and also in Roux's at Lausanne. A number of patients were presented who had had the operation and were quite well.

Roux performed such an extensive resection for us under para-vertebral anesthesia in a young woman. It was the most masterly exhibition of dexterous surgical technic I ever witnessed. All of the ribs on one side were excised except the last one. There was little or no loss of blood, only one artery forceps being applied and that did not have to be ligatured. The periosteum was quickly and most easily removed by a very large type of periosteome, the resections varying from seven to three inches from below upwards. When the operation got up as far as the wing of the scapula, its tip was raised up and away from the patient's body by a blunt hook attached to a sterilized rope passed through a pulley in a frame over the table. The scapula was bodily lifted sufficiently far from the patient and with-

out pain to enable the operator to resect with ease even the first rib. The operation was completed within thirty minutes. The object, of course, was to collapse the lung on that side and thus starve out the tubercular process. It is only employed in specially selected cases.

THE SUN CURE OF TUBERCULOSIS AT LEYSIN.

Professor Rollier entertained us at luncheon at one of the many chalets required to house approximately a thousand patients for the sunshine treatment for tuberculosis and the so-called Sun School in the snow covered mountain of Switzerland. It is a truly wonderful institution and the results in tuberculosis are phenomenal.

Children predisposed to tuberculosis, clad in nothing but breech clouts, spend all of the school days out of doors even though surrounded by snow, and as a result are very much inured to it and are as black as Mexicans. They have all sorts of outdoor sports and altogether are a most hardy looking group.

Clad in a similar manner, the patients in beds, lie out on balconies in the sun for a certain number of hours each day until they are as brown as berries. It is especially applicable in treatment of lesions of the bones and joints. Very little osteomyelitis is seen. The differentiation is by x-ray and other methods. The average time for cure of tubercular lesions is about two years. Practically no operations are done except for the occasional evacuation of a tubercular abscess. Orthopedic and corrective apparatus is used very skillfully for tractions, immobilization, posture, and for correction in connection with the treatment. The case is constantly watched with the x-ray as well as clinically and one can quickly visualize the progress of the case and the behavior of the lesion. The disease is not only cured but we saw many cases with their x-rays and photographs of movable knee, hip, and other joints that were not only cured but had almost perfect function. The most striking cases were those of Pott's disease with kyphosis. After the progress of the disease was stayed, the deformity

was overcome by the very simple device of allowing the patient to lie on the abdomen with padded blocks under the chest to overcome the kyphosis. It is perfectly surprising to see the changing of these grave deformities into very satisfactory, straight spinal columns that were healed, as proven by the x-ray and the general condition of the patient. I have used the sunshine method in a modified form as best one could here ever since Rollier's work on heliotherapy appeared and can personally testify to its very great possibility in our own work. While they do not use it for pulmonary tuberculosis as much as for that of bones and joints, I have seen many striking cures here, one in particular, where the case was complicated by laryngeal tuberculosis and with the aid of Dr. Cullom and the sunshine, the patient is now well of both lesions at the end of seven years.

STOMACH SURGERY.

The continental surgeons practice the Bilioth No. 1 resection of the pyloric end of the stomach with direct union of the cut end to the duodenum very much more frequently than is done in America. It is very much more philosophic than the indirect method of restoration of the canal, absolutely does away with the ulcer bearing area, with the mechanism of the excess acid secretion and very largely with the occurrence of secondary marginal or gastro-jejunal ulcers. The chief objection that caused it to be given up primarily was the danger at the so-called suture angle on account of the inequality in size of the end of the stomach and the end of the duodenum. That form of suturing, however, has been largely made safer by various plans so that it can no longer be urged as an objection. Inasmuch as the majority of ulcers of the stomach occur on the lesser curvature which require resection anyhow, the entire stomach can be very greatly mobilized by going high upon the lesser curvature and tying the coronary artery near the celiac axis allowing the stomach to be sutured to the duodenum without tension. This is very ingeniously arranged for by the operation of Shoemaker of The

Hague and by the use of his clamp which mechanically plans for the suturing to taper the lesser curvature down to a small opening approximately the size of the duodenum. The duodenum itself can be mobilized and brought easily a considerable distance over to meet the stomach.

We planned to go to Innsbruck largely because of von Haber who has done about 1700 resections of the stomach for gastric and duodenal ulcer with a four per cent mortality. After our itinerary had been arranged he was called to the University Clinic at Gratz. Professor Ranzi, one of von Mikulicz's associates at Vienna, had taken charge of the university and the clinic. We were very much interested in the stomach work and also that of Chiari, a former assistant of von Haber, who carried out the technic of his chief with celerity and safety.

In carcinoma or with ulcer in the center of the stomach, particularly if it is adhered to the pancreas, it is not always possible to do the Bilioth No. 1 and under those circumstances we saw several of the continental surgeons do a sleeve resection in preference to either the Bilioth No. 2 or the Polya. Most of the men added an *etéro*-anastomosis to the resection, which makes for added safety.

PARIS.

In Paris we were greatly charmed with the work of de Martel, Pauchet, Faure and Gosset. The latter is the chief at the Hospital Saltpetier, the clinic that was built by Doyan and Segond in a hospital that although several centuries ago was a prison for women, from which the famous Manon Lescaut escaped and on whose picturesque life the opera of that name is founded. This hospital also has had many famous physicians, among them the immortal Charcot.

The technic at Paris was very beautiful and in very great contrast to the war surgery that we saw at the hands of the French under very adverse circumstances. Practically all of the Parisian surgeons, and continental for that matter, use the Reverdin needle. Gosset sterilizes instruments by hot air instead of water. Although in

use nine years, they were bright and perfect as when first used.

In spite of the many splendidly executed large resections which we saw for duodenal as well as gastric ulcer, the feeling that for the average duodenal ulcer, gast.o-enterostomy is the best operation, giving ninety per cent permanent cures with a mortality under two per cent and the incidence of marginal ulcer being only two or three per cent. However, for ulcer of the lesser curvature and where the stomach can be mobilized, the Bilioth No. 1 appeals so strongly that it will probably be utilized more and more.

One of the most remarkable surgical feats that we saw at all was in de Martel's clinic—a cerebello-pontine tumor removed from a young woman under local anestehsia in a sitting posture. The motor saw quickly exposed the tumor which was very readily hulled out, leaving the capsule, occasioning no bleeding. The patient was asked from time to time to incline her head slightly to the right or left. The entire operation was completed within half an hour, the patient left the room smiling, and it was altogether the most magical piece of surgery that we had ever witnessed.

ZURICH.

Among many most interesting post-operative results shown us by Professor Clermont at Zurich, we were especially impressed with a case of a diverticulum of the lower end of the esophagus in a woman who vomited solid food but no blood, had been treated a year for ulcer said to be cancer, on account of her chachetic look. The operation was made by an abdominal incision and the intra-abdominal part of the esophagus had tape passed around it and the diverticulum was literally pulled through the diaphragm and resected. The esophagus was closed by three layers of sutures and a temporary jejünostomy performed. The method of approach seemed most ingenious and the result very remarkable. Another case of carcinoma of the cardiac end of the stomachh was approached by an incision below the left costal margin and a resection of practically all of the stomach from the esophagus

nearly to the pylorus, was done with end to side anastomosis of the esophagus to the small remaining portion of the stomach, also followed by a temporary jejunostomy. This patient made a splendid recovery in spite of a subdiaphragmatic abscess that had to be opened and is eating five meals a day and gaining weight.

In the resection, Clermont stressed the point that we could take the first three centimeters of the duodenum. Otherwise on account of the lack of circulation, trouble happened as the first portion is supplied from above and if circulation is cut off, sometimes causes interference with healing.

BRITISH MEDICAL ASSOCIATION.

I had the pleasure of attending the British Medical Association at Bath as the American delegate. While it is not as large as our association, it is very splendidly conducted. Only one topic in each section is discussed a day, the afternoon being given to sightseeing excursions for which the environs of many English towns are so well adapted.

Intestinal obstruction was chosen as the topic for the surgical section. The opening paper was by Sir William Taylor of Dublin who showed that the mortality was no better than it was twenty years ago, first, because of delay in operating, and, second, on account of the administration of cathartics. The clinical group in which the symptoms have only been in existence less than twenty-four hours, the patient in good condition, little distention, but where splashing could always be obtained by gently "flicking" the abdomen, are the most favorable cases. The second class were the third and fourth day cases with distention and vomiting, which were more grave. The third group were the advanced, neglected, delayed cases which were cold and almost moribund.

He recommended washing out the stomach before operation in every case, as well as afterwards, which were equally important, and after releasing the obstruction he advocated Bonney's method of making a separate incision in the left upper ab-

domen and doing a high jejunostomy, sewing in a tube of six to eight millimeters in diameter and evacuating several gallons by siphonage in a few hours, followed by the injection of bicarbonate of soda and glucose, and allowing the tube to remain in two or three days. In the desperate cases after washing the stomach, the patients were operated in their beds under local anesthesia and only an enterostomy done. Some of these cases may survive by this method.

He had had most striking results in intussusception, having only three deaths out of eighty-one operations. These unparalleled results were stimulated by the occurrence of this accident in one of his own family, and he had preached early diagnosis all over Dublin so that intussusception constituted thirty-five to forty per cent of the whole obstruction group. He insisted on squeezing out the last dimple in the intestine and thinks the mortality should be five per cent instead of fourteen per cent. Mr. Sampson Handley of Middlesex Hospital lamented the impotence of the textbook descriptions of intestinal obstruction and urged that we teach the early symptoms which are the most important and not only the full-fledged picture which is really indicative of lost opportunity. His rule is that if no gas or feces are passed in twenty-four hours, after two turpentine enemas are given, intestinal obstruction should be diagnosed whether any other signs or symptoms are present. In strangulated hernia with necrotic area he advised doing lateral anastomosis around the area leaving it in the wound which is unsutured, especially in patients who are feeble and those who could not stand resection.

The writer has reported five cases of late strangulated hernia, with extra-peritoneal enterotomy of the gangrenous knuckle with and without abscess with recovery of all, without primary resection. Dr. Floyd had an additional successful case from simple incision recently.

Mr. Wilke of Edinburgh thinks that early operation under adverse circumstances is



Members of the Clinical Surgical Society with Professor Allesandri at Rome

better than operation in ideal surroundings later and called attention to the early shock in strangulation due to torsion of the mesentery in which every half-hour means so much. Enormous quantities of saline by installation was advocated. It has been shown that intestinal obstruction causes a great deficiency in the chlorids. Mr. Rowland of Guy's Hospital said their mortality the last four years was 31.5 per cent and if hernia and intussusception were omitted it would be fifty per cent. He urged against waiting for refinements of diagnosis and advocated a short incision to admit the wrist only at first as all surgeons know the danger of eventration in these cases and the wisdom of dealing with the obstruction in the simplest possible way without evisceration. Mr. Vick of St. Bartholomew's Hospital called attention to the fact that in the last four years 300 cases, including all operative deaths, the mortality was only twenty-eight per cent. In volvulus after laparotomy and the inser-

tion of a rectal tube, the recoveries numbered 100 per cent. Mr. Burgess of Manchester advised against waiting for fecal vomiting, and described palpable peristalsis as an important early sign. Mr. Souttar collected the combined statistics for all operations for acute intestinal obstruction from seven London Hospitals from 1920-1924:

Obstruction from gall stones, twenty-eight cases; mortality fifty per cent.

Obstruction from carcinoma, 358 cases; mortality 43.5 per cent.

Obstruction from adhesions, 342 cases; mortality thirty-one per cent.

Obstruction from intestinal strangulation, 223 cases; mortality thirty-three per cent.

Obstruction from intussusception (idiopathic), 613 cases; mortality twenty-two per cent.

Obstruction from intussusception (with tumor), seventeen cases; mortality thirty-five per cent.

Obstruction from volvulus, seventy-four cases; mortality fifty-one per cent.

Obstruction from inguinal hernia, 524 cases; mortality 16.6 per cent.

Obstruction from femoral hernia, 675 cases; mortality twenty per cent.

Obstruction from umbilical hernia, 200 cases; mortality thirty-five per cent.

Total, 3,064 cases.

GYE'S CANCER VIRUS.

Dr. W. E. Gye of the Medical Research Council in London has succeeded in identifying what he believes to be the etiological factor in malignant growths, namely, an ultra microscopic virus or micro-organism which his associate, Mr. Barnard, has photographed as a spheroid and which when mixed with an extract of the tumor from which the virus was filtered, will reproduce the tumor in an animal of the same species. This work was based upon the sarcoma of fowls that was described by Rous of the Rockefeller Institute in 1911 and which he was able to reproduce in the chicken by inoculation with the dead cells or with cell-free filtrate. In fact, Rous was able to reproduce three filtrable tumors, all sarcomata, but of course there were many hundreds of tumors that could not be transplanted; only the so-called fowl-sarcoma.

Gye has been able to transplant carcinoma of the breast from the human species. Prior to this time no mammalian tumor had been transmitted by cell-free filtrate. The chicken sarcoma of Rous seems to differ morphologically from all other tumors. So much so that Carrel and others have questioned whether it was a true sarcoma, but the majority of pathologists believe it to conform to all of the requirements.

While it has been believed by many that malignant growths were of parasitic origin, no tumor has ever been reproduced with a culture of any organism.

The mouse sarcoma has been carried from mouse to mouse by fragments of living cells but curiously enough it will not grow in a rat, and the tumors reproduced by the filtrate always reproduce a tumor

of exactly the same type so that they reproduce themselves not only in the same species but in the same tissues only.

At the present time most men have looked upon the transformation of cancer cells as the physiological reaction to some long continued irritation.

The Rous tumor will appear in two weeks after inoculation and they destroy the fowl within one month.

The epoch-marking feature of Dr. Gye's work postulates that there are two factors: (a) a living virus which he calls the existence produced by the cells of the growth intrinsic factor, and (b) some chemical substance itself called the intrinsic factor. The culture of the growth itself will not reproduce a cancer and neither will the treated filtrate from the tumor, whereas a mixture of the culture and the filtrate will regularly produce a full-fledged tumor on or about the thirty-eighth day. The adenocarcinoma of the breast from the patient of Professor Gask of Guy's Hospital was reproduced in a chicken, beginning at the end of a week; reached its maximum size on the twenty-first day and killed the chicken on the twenty-eighth day. Gye speaks of the common factor in the production of the Rous tumor, of the mouse sarcoma, of the rat tumors and of the human breast tumor as a specific factor. It seems to be common to all of these transmissible tumors and is almost certainly a virus. He thinks that this specific factor that is obtained from the tumor extract ruptures the cell defences and enables the virus to infect the cells. This seems to correlate with our clinical observation that chronic irritation has much to do with the production of cancer and would appear to facilitate the infection. It is a virus then presumably that gains access to the cell and provokes it to the continued multiplication of its cells. The specific intrinsic factor shows great specificity for species but the virus does not do so as tumors from one species of animals can reproduce it in another species. Thus the mouse carcinoma virus plus the fowl sarcoma specific when it is injected into mice, produces no effect but when in-

jected into fowls reproduces sarcoma. The human carcinoma virus plus the fowl sarcoma specific injected into mice produces nothing; but injected into fowls produces a sarcoma. The parasitic theory had about been abandoned by most men and it was felt that it could never be established. Ribbert had proven that cancer in its inception was a local disease and Buntlin first demonstrated that if cancer is widely removed sufficiently early it is an entirely curable disease. This has been proven over and over again by all surgeons.

Gye's theory is most ingenious and explains why the extrinsic factor, while it may be a virus common to all neoplasms, cannot by itself reproduce a neoplasm but that the intrinsic factor, perhaps some substance produced by the cell itself, is essential to allow the extrinsic factor, i.e. the virus itself, to attack the cell. He has shown, moreover, that the virus can be cultivated. It would seem that this work tends very definitely towards the solution of the real cancer problem. Gye has investigated the filtrable viruses for a long time and his discovery that an extrinsic substance is required, should allow further advances in the study of these viruses. It should be pointed out that the mere fact that an organism is not infectious by itself, but requires some additional factor, is not peculiar to the cancer virus but has been observed in the gas gangrene bacillus which requires dead tissue in which to propagate. This has been referred to as descent rupture or kataphylaxis. This is true of tetanus and the tuberculous infection and really in many of the streptococci infections. It is interesting to note that Coley of New York only recently suggested that kataphylaxis was required to allow the cells to be attacked so as to produce the phenomenon of cancer. This seems to be the only correct guess out of many hundreds.

In addition to the great value of this discovery of Gye's, it is believed that the cause of a great many other diseases can be now studied to great advantage, namely, smallpox, measles, encephalitis, foot and

mouth disease, and certain infections of the lower animals.

It has long been known that ultra-microscopic micro-organisms exist because certain infected material has been proven to retain the infective agent even after passing through a filter so small that the smallest known visible micro-organism will not pass.

Barnard, working with Gye, has shown that by the ultra-violet light a photograph of these small bodies can be made if a short enough wave length is used. This has been done by a microscope of special construction that has great stability and high accuracy of movement. Mr. Barnard has long been interested in this work and has written on the violet light microscopy in the "Dictionary of Applied Physics." He had already studied trench fever and some important work in bovine pleuropneumonia which is really the smallest organism that has been observed under ordinary bacteriological culture methods. He photographed spheroids that appeared as a surface colony on tubes after twenty hours that had been inoculated with the filtrable virus. The malignant growth virus has a much lower visibility than the pleuro-pneumonia owing to its very much smaller size. The small bodies that were photographed were controlled and in the control the inoculated tubes of medium were uniformly blank. It still remains of course to cultivate the virus from a single colony or even perhaps from a single spheroid that has been photographed and the tumor reproduced from the culture thus obtained. That is the work that Dr. Gye is going to continue and it is very ardently hoped that the solution of the cancer problem so far as its etiology is concerned, is on the way.

It is not improbable that there are as many viruses as there are varieties of cancer. Cancer is so protean, has many types, attacks many different tissues, which react in many different ways, and has many degrees of virulence. In view of such extensive and elaborate investigation by a

trained bacteriologist, physicist and microscopist, dealing boldly and honestly with the many hitherto insuperable obstacles to the unravelling of its real cause, the injec-

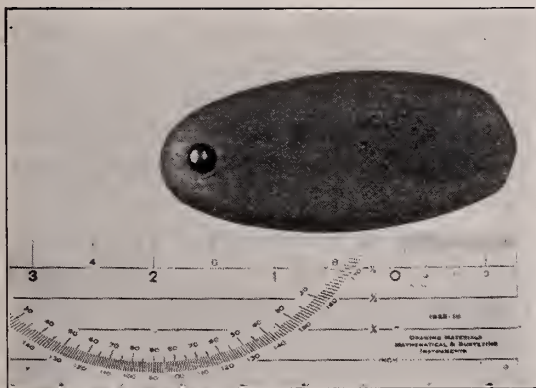
tion of substances of a secret character seem so empirically and ignorantly puerile, as not to be distinguished from commercialism thinly veiled.

A REMARKABLE FIND

O. J. PORTER, M.D., Columbia, Tenn.

IN response to a request from the Smithsonian Institute to search this locality for evidence of prehistoric man's possible cliff dwelling, I found, as described below, an object of unusual interest.

In the mouth of an ancient cavern, overhung by a roof-rock projecting from a creek bluff, was an eighteen-inch accumulation of compacted dust overlaying the floor rock. This was carefully removed by commencing at the outer edge and advancing on the eighteen-inch face exposed.



Remains of fire evidence were encountered four feet from the outer edge and twelve inches from the surface. The earth was brought out in a wheelbarrow and put through a coarse sifter. The subject of this paper was thus recovered.

It was caked dirt and came near being thrown aside, as a limestone flake from the ceiling, several of which had been the cause of dashed expectancy. I noted that this was not limestone but a copper ore rock

much used by men of the New Stone Age for the fashioning of skinners, pestles and the like. What its purpose, however, was most intriguing. It could not have been an ornament.

The hole, very near one end and not quite in the midline, had been carefully drilled at a 45 degree angle to the surface, a cone-shaped bit being used. It had been drilled from both sides to a common point resulting in a narrowed lumen midway. This hole does not show the usual thread-worn groove in its upper margin caused by the string it would have carried had it been a pendant ornament or amulet. The opposite end clearly shows thumb and forefinger prints respectively on the opposite surfaces, the result of acid sweat erosion through one or more lifetimes of use.

My opinion is that prehistoric man worked out this device, or instrument, to meet, in a most helpful measure, the afflictions of myopia, hypermetropia and astigmatism.

The instrument was held by the thumb and forefinger. It is shaped to fit the side of the nose just in front of the inner canthus. The hole is biconical for obvious reasons. It is set obliquely so that its axis pointing toward the inner canthus enabled the user to narrow the opening by a small arc movement of the outer end, thus securing the iris effect of a camera.

By the aid of this device, the cave man overcame to a marked degree the eye defects enumerated above.

It requires some practice to use the instrument easily, but once the "hang of the thing" is caught it is surprising to see old men, or young myopics, read with facility, print which, without its aid, appears hopelessly blurred.

It is of especial interest, in view of the fact that civilized man was without means of overcoming refractive errors until the invention of spectacles by the Chinese about

the beginning of our present era. These were first introduced into Europe about the middle of the thirteenth century.

A myopic, King Tut, would have given the riches of his tomb for this little piece of handwrought rock.

My opinion regarding this find is confirmed by Dr. G. C. Savage of Nashville and Dr. DeSchweinitz of Philadelphia.

SNAKE BITES AND THEIR TREATMENT, WITH CASE REPORTS*

ROLLAND F. REGESTER, M.D., Nashville

SNAKES are easily confused with one another, and the question as to whether a certain one is poisonous or harmless arises again and again. Poisonous snakes are provided with a specific venomous fluid and an apparatus especially adapted for the introduction of this poison into their victims. As it is usual to regard all snakes as venomous, the burden of proof is upon those believing in their innocence. So many wonderful stories concerning snakes have been current from time to time that the public in turn becomes skeptical about everything concerning snakes or firmly believes in traditional accounts which usually are highly erroneous. Making allowance for misinterpretation of certain natural habits of reptiles, the grain of truth may be perceived in these traditions in spite of the exaggeration which ordinarily accompanies a good snake story.

DISTRIBUTION IN THE U. S.

The coral snake is found in the southeastern United States, and is common in South Carolina, Georgia, and Florida. It is often discovered in sweet potato fields. R. L. Ditmars in "Reptiles of the World" states that the semi-aquatic, extremely belligerent water moccasin, infests "the lagoons and sluggish waterways of the southeastern portion of the United States." The copperhead (a variety of moccasin) is found east of the Mississippi River from Florida to Massachusetts, and west of the Mississippi in Texas. Ditmars further states that in the south it lives on plantations, while in the north it lives in or near the forests. In practically every part of the United States there dwells some variety

of rattlesnake. Some inhabit prairie, some desert, some rocky land, some timber regions, and some dwell adjacent to water.

BELLIGERENT CHARACTERS.

The diamond-back rattlesnake is the most poisonous serpent of the United States. A small rattler is not nearly so dangerous to life as a big rattler. Next to a big rattlesnake in poisonous power comes the water moccasin. Ditmars places the coral snake in the "highly formidable" and the copperhead in the "highly-venomous" class. Statistics evidently contradict the belief that the copperhead is very dangerous. Prentiss Wilson claims to have had 99 cases of copperhead bites with only five deaths. Although Wilson's figures make the statistics of recovery highly favorable, it is quite possible that some of his cases were those who thought they were bitten by copperheads when in reality they (the assailants) were non-poisonous serpents.

A few words may be stated here concerning the nature of the poisonous gland. It will be recalled that in amphibians and some reptiles the partoid is a mucous gland and that in higher mammals it is a serous gland. Noguchi states that the gland in poisonous snakes partakes of the nature of both varieties.

POISONOUS APPARATUS OF VENOMOUS SNAKES.

The fluid, or venom, is injected into the snake's victim by means of specialized teeth on the premaxillary bone of the upper jaw, which differ from normal reptilian teeth by having a groove, or canal, from base to apex. These venom fangs are large and readily observed. The canals of the fangs are fed with fluid from poison glands by means of excretory ducts which connect with the latter. Venom does not

*Read before the Staff of St. Thomas Hospital, Nashville.

flow freely except when the snake is actually striking, for the end of the duct, which is not in contact with the base of the fang, is normally compressed by a sheath or fold of the mucous membrane. A rattlesnake may open its mouth to the fullest extent and may or may not erect the fangs. The snake apparently has perfect control over its fangs, raising or depressing them at will. Introduction of venom is accomplished by the combined action of several muscles, which open the mouth, erect the fangs, and compress the poison glands, thus forcing the venomous fluid through the connecting duct into and through the fangs in the brief space of time in which the snake strikes its victim.

VENOM OF POISON SNAKES.

Venom is a secretion of a gland which resembles in its development the partoid (a salivary) gland in mammals, and is composed of from 50 to 70 per cent proteins; the chief remaining components are water and carbohydrates, with occasional admixtures of abraded epithelial cells, or saprophytic micro-organisms, while salts, such as chlorides, phosphates of calcium, magnesium and ammonium occur in small quantities. The reaction of venom to litmus is usually acid, in some cases neutral. The venoms of the different species of poisonous snakes differ to a greater or lesser degree, though all venoms are multiple in nature, that is, they contain several toxins which act independently of each other. Warm blooded animals are usually more susceptible to venom than cold blooded. Dried venom retains its original toxic properties in unaltered strength and quality for an indefinite period. Dr. S. Weir Mitchell found that venom, kept dry for twenty-three years, was unaltered in these respects. In a fresh state the venom of a snake is a somewhat viscid fluid of a yellowish color.

The effect of venom on the victim is due to the complicated action of several toxic elements, of which neurotoxins and hemorrhagins are the most important. Neurotoxins have a destructive action upon the nervous system, and play the most impor-

tant part in producing the death of a victim of venom poisoning. The venom of the cottonmouth water moccasin contains more neurotoxin than that of the rattlesnake, and consequently its paralytic effects on the respiratory center and motor nerves is stronger. This toxin not only breaks down the nuclei of the ganglion (nerve center) cells, but produces granular disintegration of the sheath (myelin) and fragmentation of the conducting portions (axis cylinder) of the nerve fibers. These neurotoxins offer a higher resistance to heat and retain their toxic properties after prolonged treatment with alcohol.

The hemorrhagins constitute the chief toxic constituents of rattlesnake venom and have a solvent action on the endothelial cells composing the walls of the blood and lymph vessels, particularly the smallest of them, known as capillaries. One of the most alarming symptoms ensuing from the bite of a rattler is the enormous swelling and extravasation of blood around the wound. The blood escapes from the blood vessels through holes in the walls, for the walls of the vessels are really dissolved away in places. Red blood cells, as well as white, escape from dissolution of the walls of the blood vessels.

The venoms of different species of snakes dissolves the red blood cells also in a similar fashion. This cell-dissolving substance which has a peculiarly destructive effect on red blood cells is called hemolysin. In dogs inoculated with venom the hemoglobin contained in the red blood cells readily crystallizes. It has been found in animals dying from suppression of urine after being bitten that the tubules of the kidneys are often completely blocked with hemoglobin crystals. The activities of the white blood cells (leukocytes) also are suspended by the action of the venom. Moreover, it has been found that venom contains elements which are agglutinating as well as dissolving for the white cells, and that these are distinct from those which affect the red blood cells.

Biochemical studies have shown that snake venom possesses four distinct classes

of ferment-like substance apart from the cell dissolvers (cytolysins) and these are the fibrin ferment, and the proteolytic, diastatic and lipolytic enzymes. One of the most remarkable features resulting from the bite of either the rattlesnake or the moccasin is the loss of the reduction of capacity of the blood for coagulation; it has been found that venom contains a powerful ferment which attacks the fibrin (the coagulating element) of the blood. The proteolytic enzyme activates the inactive pancreatic juice, enabling it energetically to attack albuminoids; the fourth enzyme has a feeble lipolytic (fat dissolving) action in the splitting of lecithin and in fatty degeneration in the liver.

MORTALITY IN AMERICA.

The rattlesnake bite produces a mortality of twenty-five per cent here (same as mortality from cobra bites in India). Copperhead bites, however, according to Wilson, produce a mortality of only five per cent (the average human death rate is about 21,700 a year).

It is known that bites on the head and trunk are more dangerous than elsewhere, and that the mortality rate for bites on the upper extremities is practically double that for the lower. The mortality in children under ten years of age bitten by our venomous snakes is at least double that of adults.

TREATMENT.

There can be no doubt that the chief precaution to take in case of snake bite is to prevent systematic absorption of a fatal dose of venom from the amount contained in the tissue immediately surrounding the wound.

Cases, as a rule, must be treated without proper appliances. If the bite is upon a limb, and it usually is, apply several ligatures at different levels above the bite to prevent dissemination of the poison from the limb throughout the body. As soon as this is done, make crucial incisions to the depth of each bite. A rattlesnake bite, a copperhead bite and a water moccasin bite show but two punctures. After incising, suck or cup it if possible and cauterize with

pure nitric acid or by cautery. There is no danger in sucking the wound, provided there are no abrasions upon the lips, cheeks or tongue. Before sucking, fill the mouth with dilute solution of permanganate of potash, to oxidize and thus destroy the poison.

The cutting must be free in all directions, and especially so in the direction of the blood return to the heart. After the punctures have been opened and the blood flowed freely, the wound should be carefully washed with a strong solution of potassium permanganate. Another method equally successful is to inject an aqueous solution of permanganate of potash with a hypodermic syringe into the puncture of each fang, and then open the puncture with a knife as directed above. Permanganate of potash will neutralize its own weight of venom and is effective against every class of snake venom. The wound should be kept open by means of rubber drains for several days.

The list of remedies which have been used in cases of snake bite includes almost everything conceivable, from local applications of cloths saturated with urine to poultices made by splitting open living chickens. In the past, alcohol, in the forms of wine, whisky and brandy, has been freely administered, although there has been no foundation for its use except popular belief. Certain investigators demonstrated that the absorbed venom is eliminated in part by the stomach, and it was thought therefore that the venom could be precipitated by the alcohol before its re-absorption. Recent experiments have shown that alcohol precipitates venom but does not impair its toxic qualities. By increasing the blood pressure, and in large doses intensifying coma, alcohol has a distinctly injurious influence on the victims of poisonous snakes.

It is well known that when a drunken man is bitten by a large poisonous snake, he is sure to die, because the depression produced by the alcohol is enormously accentuated by the venom. Moderate doses of whisky and brandy are useful.

Stimulants are almost universally used. Some give strychnine hypodermically. In acute cases, when the venom has been injected directly into a blood vessel, the chances of recovery are slight. In such cases, and as a last resort, intravenous injections of strychnine may be employed to stimulate the nervous centers as speedily as possible.

Some also give digitalis and caffeine, others adrenalin as given in shock and where there is a marked fall in blood pressure. However, the use of these stimulants is regarded by some as being dangerous, due to increasing hemorrhage through rise of blood pressure. If respiration fails, artificial respiration and oxygen are required.

The treatment by serum is the sole means of neutralizing the poisons and arresting the action which their several toxic elements exercise on the tissues of the body. At present it is generally admitted that the serum, to be highly efficient, must be produced by an animal immunized to the species of snake causing the particular accident, or at least a related species; that is, the anti-poison should be specific or nearly so. The subcutaneous and intramuscular methods of injection may serve in the majority of cases of snake poison, but preference should be given to the intravenous channel whenever the case is of a dangerous character. The quantity of anti-toxin may vary within certain limits, but should never be less than 20 c.c., and even 100 c.c. may be given. However, the fact that there are three types of poisonous snakes in the United States, necessitating three distinct anti-venins, and that under the circumstances the calls for any one kind are so infrequent, it is practically impossible to obtain the serum immediately from wholesale or retail drug stores or from biological laboratories.

CASE REPORTS.

A white male, age 15, was admitted to Vanderbilt hospital July 8, 1925. His complaint was swelling of the right arm throughout and in supra and intraclavicular region on same side. He stated that twenty-six hours previously, while

working in the woods, he was bitten by a snake, which he thought was a rattlesnake. However, the snake escaped and could not be positively identified.

Immediately after he was bitten a tourniquet was applied above the site of the bite and the patient then consulted a physician, who made two incisions and poured a liquid into the wound. This was probably potassium permanganate solution. The patient complained of a feeling of numbness in his face, tongue and left arm. This sensation began about ten minutes after he was bitten and continued for ten hours. This sensation was not felt in the injured arm.

POSITIVE PHYSICAL FINDINGS.

On admission to hospital the patient appeared to be acutely sick, but seemed to be in no great pain. Several incision on the dorsum of the right hand between the thumb and index finger were noted. There was marked swelling of the entire upper right extremity; also involving the supraclavicular spaces. The skin was tight, glistening and hot. The tissues were tender to the touch. Discoloration with small petechial spots were noted in supra and intraclavicular regions. The history otherwise was unimportant.

TREATMENT.

Fluids were given freely. The patient was given only liquid diet during first ten days. Caffein-sodium-benzoate grains $1\frac{1}{2}$ was given hypodermically q.4.h. during the first four days.

The hand and arm was soaked in hot saline solution for thirty minutes q.4.h. during first fifteen days of illness and moist dressings were applied continuously between soakings. Codein sulphate gr. $\frac{1}{2}$ was given once on second day for pain.

COURSE OF ILLNESS.

The patient remained in the hospital twenty-one days. During the first two days he complained of pain in the entire right arm. The swelling had subsided entirely on the sixteenth day. Temperature ranged from 97 deg. F. on admittance to 102, reaching maximum on third, fourth, fifth and sixth days. Pulse on admittance 94, maximum 120 on fifth and ninth days. Patient was discharged on twenty-first day. No complications.

CASE NO. TWO.

A white male, age 50, was admitted to St. Thomas Hospital July 9th, 1925, complaining of pain and swelling in the right lower extremity, involving the entire foot, ankle and lower two-thirds of leg.

The patient stated that four hours previously he was bitten by a rattlesnake, which he killed and found it to possess fourteen rattlers. The patient immediately placed a ligature around the limb below the knee. He called a doctor, who arrived about an hour later, gave strychnine and made two small stab incisions along the lateral surface of the middle third of the leg, the point

at which the snake's fangs entered his leg. The patient arrived at the hospital in apparently good condition, was suffering no pain, but complained of slight vertigo, and tingling of hands and tongue. His right limb was markedly swollen below the knee and small petechial spots were noted in the region of the wound on his leg. The following medicinal treatment was given: Light diet. Fluids freely. Magnesium sulphate ounces one on admittance and repeated on third day. Strychnine sulphate gr. 1-20 q.5.h. Whisky in one ounce doses was given q.4.h. during first day.

The local treatment consisted of: Injection of 1% aqueous solution of potassium permanganate into the wound by means of a hypodermic syringe. Ice bags were applied constantly.

The patient remained in the hospital seven days, during which time his pulse rate ranged from 70 on admittance to 100 on fourth day.

Temperature: Maximum 99 1-5 on admittance,

and it did not exceed 99 afterwards; it was normal on third and fifth days. Entire swelling had subsided at end of the fifth day, and the patient was discharged on the seventh day. No complications.

CONCLUSION.

It will be observed that in case No. 1, which ran a severe course, the patient was bitten on the upper extremity, while case No. 2, in which the patient was bitten on the lower extremity, ran a much milder course. This bears out the statement made in the paper that cases in which the bites are received on the upper extremities usually run a more severe course than do the cases that are bitten on the lower extremities.

MINOR HEAD INJURIES*

REPORT OF CASE.

K. S. HOWLETT, M.D., Franklin, Tenn.

E. A. J. White, age 63, height 5 feet 10 inches, weight 175 pounds, section foreman, was injured on October 20th, 1922, 9:30 a. m., by being struck on the head by a rather heavy plank 5½ feet long, which had been thrown in some way from a car while ballast was being unloaded. He arrived at my office about 15 minutes later, stating that he had walked from the place of the accident, a distance of about one mile.

Inspection showed a contused scalp wound, about two inches long, penetrating the skin only. This wound was dressed in the usual way, healed readily without infection and is of no further significance in the consideration of this case. However, the man complained of dizziness and headache, showed a slight unsteadiness of gait and answered questions slowly and seemed dazed and confused; in other words, as my report at this time states, manifested general symptoms of concussion of the brain. However, there was no hemorrhage from the nose or ear and the blood pressure was 120 m.m. Hg., systolic and 85 diastolic. Hence I did not consider that the urgency of concussion symptoms justified spinal puncture.

The man was sent to his home in my automobile in care of my driver, who accompanied him into his house and helped to undress and put him to bed. I saw him again that afternoon, when he appeared entirely rational and normal mentally, though he still complained of dizziness and headache to such an extent that a sedative was given at bedtime.

The hearing was quite defective, and

while he acknowledged some deafness prior to the injury, he was sure that it was very much more pronounced following the injury. Again a careful inspection showed no hemorrhage from the ear. The arteries felt hard and corded under the fingers, and on account of this and the dizziness and severe headache the blood pressure was again taken and found unchanged. I saw him again twenty-four hours later and found him entirely rational and seemingly normal in every way except that he still complained of some vertigo, though he stated that his headache was much better. He had made out the customary report of his accident for the superintendent's office, which he asked me to have sent in. He was advised at this time not to return to work until further orders.

I visited him again one week later, or on the eighth day after the accident. At this visit he was at dinner, upon my arrival, and later came into the room without any apparent unsteadiness of gait. The scalp wound had healed and he expressed himself as feeling fit to return to work, though he still complained of dizziness. After careful examination, having him walk about the floor, testing his eyes and reflexes, he was advised that he could safely return to work, which he did on the following Monday, ten days after the accident, and continued on his job for three days, during which time he made no complaint to me.

On the night of the third day, after returning to his home, he walked out on the back porch and fell through on open cellar door to the concrete floor beneath and was rendered immediately unconscious. His regular family physician, Dr. Sam White, was called, and I quote from his written report, made on December 15, forty-five

*Read before the Association of Railroad Surgeons, Section Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

days later.

"I have known Mr. J. for twenty years and have been his family physician for five years. I was called about 6:30 p. m. November 30, 1922, to see him at his home. I found him unconscious and bloody over his whole body on account of hemorrhage from his nose. He had a bruise on his (right) shoulder and a large bruise over his right hip and on his right arm. The right side of his face was skinned, with an abrasion over his right ear. No long bones were broken. He remained unconscious for about fourteen hours before ever answering a question, when he reacted and vomited. The pulse remained slow, under 50 for several days, and the hemorrhage from the nose continued and really kept up at intervals for several weeks. He also had slight hemorrhage from right ear at the time of the accident. This accident was due to his fall in the cellar at his home before my arrival there.

These symptoms, detailed above, convinced me that he had a fracture at the base of the brain, which I expected at the time to prove fatal. As he had some reaction, however, on November 5th, four days later, I called in Dr. A. W. Harris of Nashville, who concurred in the diagnosis of fracture as indicated above. Mr. J. has not been able to leave his home up to this time (45 days after the last accident). His hearing is very much impaired. He has constant vertigo and is unable to balance himself. His pulse remains slow and he is dull and very inactive physically and mentally. In my opinion he will not be able to resume active service."

Dr. White further stated that in his opinion the patient had had no previous ailment that could have contributed towards the fall in the cellar, save the railroad accident stated above. He did not state what bearing he thought this accident had on the later accident or whether it had any bearing at all. The question as to whether or not the later accident was independent of the former accident and due entirely to falling through the open cellar door in a dark porch was not touched

on by Dr. White, and his death before the suit was brought prevented this matter being further brought out.

Dr. A. W. Harris' deposition, taken in September, 1924, nearly two years after his examination of the patient, but based on notes made from memory a few days thereafter, was very long (as such depositions, where there are lawyers on each side to question, usually are) and contained many details which time will not permit to be included in this paper.

The points brought out which seem to have significant bearing on this case are:

1. That the symptoms at the time of his examination clearly indicated a fracture of the skull extending into the base.

2. That this was confirmed by spinal puncture, the fluid obtained thereby containing blood.

3. That the deafness, especially pronounced in the right ear, was probably due to the injury, but that the eye grounds were unchanged at his examination.

4. That it would be impossible to determine definitely from his examination whether the fracture was caused by the fall into the cellar four days before or the blow on the head thirteen days before, and he declined to express an opinion as to even the probabilities on this point.

5. That the man would ultimately recover, though it would be impossible to estimate how long it would be before complete recovery.

I saw this patient with Dr. White on November 18, 1922, and we both were of the opinion that it would be several months before he could resume his work and that his disability might be permanent, and the deafness would almost surely remain as a serious handicap.

Dr. Duncan Eve, Sr., saw and examined the patient on January 31, 1923, and from his report the following extracts are taken: "He (the patient) talks hesitatingly and separates his words; he is distinctly hard of hearing, but has normal vision in both eyes. He has a spasmodic (jerking) gait of his right leg, and complains of vertigo and headache. He has low B.P. and the

reflexes are perfect even in the right or crippled leg. He expressed great confidence in Dr. Harris' ability but protested against Dr. Harris' opinion that he would get well, saying he was getting worse all the time."

While Dr. Eve suspected that he was attempting to make the most of his injuries, and while he was of the opinion that time would improve him as to most of his symptoms, yet he doubted if he would ever be able to resume his position as section foreman.

The outcome of it was that the man brought suit against the railroad and the case came to trial two years after the accident, after Dr. White was dead and the facts were anything else but fresh in the minds of those of us who had seen him. His contention was that he was perfectly well before the first accident and was never well afterwards. That he had continued headaches and dizziness, and had fallen a time or two during the ten days' interval between the two accidents. That his fall into the cellar was due to an attack of dizziness and not to lack of knowledge that the cellar door was open. He obtained judgment for \$6,000.00. An appeal was taken and is now pending before the Supreme Court. From casual observation, as he walks the streets, the man at this time seems normal, walking with no apparent unsteadiness of gait, and meeting and greeting people just as any other normal man would. He declined to return to work for the railroad, and I think has taken up no other occupation.

The points of interest and for discussion in this report are:

1. The special importance of minor head injuries from a legal standpoint, in addition to the purely medical aspect of such a case, showing the necessity of making every test, even in the slightest injuries, to eliminate suspicion of fracture or of brain injury. The effect of shock or mere fright should receive due consideration, as both are supposed to have bearing on later developments.

2. It is a fact that what appears to be

a slight injury may cause a fracture or even where no fracture has occurred may be followed after several days of apparent normality by sudden or gradual brain disturbance, stupor, unconsciousness and death.

3. It is probably true that persons with high blood pressure or blood vessel changes, heart lesions, or other conditions, predisposing to apoplexy, cerebral thrombus or embolism, are rendered more liable to these lesions by the shock, fright and excitement of even a minor accident.

4. In addition to these causes, the mechanical effect of a slight blow, causing the mildest concussion upon the blood vessels and tissues of the brain, is undoubtedly a real factor in causing weakening and rupture of a blood vessel and in predisposing to infection and abscess, or in causing subsequent mental degeneration or abnormality.

5. How much do these injuries, minor or severe, contribute towards arterial degeneration, which leads to apoplexy? Where there is unconsciousness occurring simultaneously with or immediately following a head injury, the seriousness of such condition is readily recognized and the patient treated accordingly by spinal puncture or trephining, quietude, etc., and yet the mortality in these cases seems less than in those where stupor or complete unconsciousness comes on after an interval.

The latter, so-called delayed cases of apoplexy, described by Bollinger, coming on after a few days or even weeks, are practically always fatal. All of Bollinger's cases were and the autopsies showed hemorrhage in the fourth ventricle or the aqueduct Sylvius, with indications of previous local softening. Even where the lesion is located and trephining done after the interval the damage to the brain has already become sufficient to either prove fatal or result in permanent disability.

Cases are reported where serious symptoms of an apoplectic form character have developed years after the injury, one ten years, and one twenty-six years afterwards. There are some grounds, how-

ever, for doubting the connection of the condition with the injury in these cases.

In the case reported in this paper, but for the fall in the cellar, there would be good reasons for suspecting a delayed apoplexy. But even without this latter accident the man's ultimate and apparently complete recovery from an apoplexy, occurring after an interval of ten days, would, in my opinion, almost conclusively preclude the first direct accident as a direct causative factor.

If a small blood vessel had been broken and slow hemorrhage taken place it would hardly have continued for ten days before the clot would have produced unconsciousness, which, by the way, was sudden.

If the injury to the brain had been sufficient to produce gradual deterioration or softening, with consequent delayed rupture of blood vessel or apoplexy, isn't it likely that either death or permanent disability would have ensued?

DISCUSSION.

Dr. Jere Crook, Jackson: I was greatly edified by the very concise and well written report of the interesting cases. It is far more interesting to this section of the Tennessee State Medical Association than to the general session, because we are so vitally interested. Secondly, while we are not claim agents, there is an obligation on us to treat these cases with more tact than we would an ordinary case, perhaps. No more skill than we would give to the treatment of any case, but our examination should determine whether or not there may be some permanent or long-delayed lesion. It seems to me that a patient of this character, employed by some corporation, should always be subjected to x-ray examination. Such an examination in the beginning by an expert radiologist would often settle definitely whether there was a fracture of the base, then should suit be brought, with the picture and the opinion of the expert to show to the jury, it could be demonstrated whether there was a fracture in the beginning. In this case a second picture made at the time of the second injury would undoubtedly have shown a fracture, according to the facts brought out, and then no suit could have been held or maintained. This is very important and even though there is some additional expense to the corporations my experience is that they always want the cases definitely diagnosed.

In my experience with some twenty or twenty-five corporations in Jackson, I make it a practice, even in injuries of the finger, if the patient ex-

hibits a great deal of localized pain on examination, to have an x-ray picture made. We used to go by the symptoms of pain, especially if localized, but now we do not need to rely on that. A man will often assume his pain and may give the symptoms and picture of a fracture, but if you take him to the x-ray room in ten minutes you have the definite proof, which settles it. What is true of the finger is even more true of the skull and the long bones. In the skull injuries, unless there is some injury that can be demonstrated by the x-ray examination, it is probably a concussion. I feel that the x-ray examination should be a routine procedure. The spinal puncture test will give great information, but the x-ray examination often makes this unnecessary. It is proof which can be shown to the patient and his friends. In some instances the x-ray examination may be a costly procedure to the corporation, but on the other hand it is often a great source of information when a man has claims, an injury, and cannot successfully prove it by x-ray examination. More and more am I coming to rely upon the confirmative diagnostic resources of the x-ray laboratory, especially in injuries to employees of a corporation.

Dr. William Britt Burns, Memphis: I wish to relate a case that was somewhat similar but in its finality was entirely different. I think in our consideration of concussion that with a large experience, those of us who have done as many as 100 trephine operations will almost come to the point of weeding out the term "concussion." There is practically always a molecular change and derangement of the capillaries of the brain sufficient to produce hemorrhage, and some of the cases that have even a moment's unconsciousness will some time later on show evidence of massive injury.

In a case I saw some time ago the patient was about fifty-nine, and was struck on the lower point of the jaw by a jack lever. The lever struck him a broadcut and the force was transmitted through the inferior maxillary and zygomatic arch to the temporal region. He had just a few moments of unconsciousness. I saw him probably fifteen minutes after the injury. He was sitting up and there was no apparent serious injury. I put a simple dressing over the injury and did not see him again until January 7th. He was injured on October 14th. I had seen the man from time to time in the course of four or five years and he had serious chronic headaches, probably nephritis. He had headaches before his injury and after his injury, so he was not alarmed particularly about his headaches, because he had had them before and he did not consult me or any other physician. Some time between the date of injury and the end of the free interval on January 7th he got a first-class life insurance policy. He was practically free from October 14th until January 7th, when he began to have symptoms. A hemiplegia

gradually developed and about January 12th I trephined this man and found a clot over the motor area as large as the palm of a man's hand, perfectly dry and not encysted. So you see we can have massive injuries of the brain wherein there are only minor initial symptoms, with only a few moments unconsciousness and a free interval of practically three months. I do not think we can say that this patient of Dr. Howlett's was absolutely free of brain pressure, notwithstanding that he had his second injury probably as an accident. I do not think we can say conclusively that the man did not have a definite brain injury. I believe he had and that it was more than concussion. The man had intense dizziness, as described by the doctor, and he certainly had some definite brain injury to account for it.

Dr. William S. Austin, Knoxville: This case brings to mind a lesson we have all had. I agree that the industrial surgeons should employ the x-ray more often and should make more careful examinations. These cases interest the industrial surgeon more vitally because of the fact that he is always likely to be brought into court some time later. This case is of that type and in the medico-legal question we surgeons have to assume more than we have in the past. If we have a case of definite fracture of the skull, or a possible fracture of the skull, we should surely subject that patient to x-ray examination. With a severe facial or head injury we have to have an x-ray picture in order to know what has really happened. If the soft tissues of the head are torn off without evident fracture, it seems to me

the x-ray is far more necessary than in the case which is self-evident.

Dr. K. S. Howlett, Franklin (closing): I think undoubtedly that Dr. Crook's suggestion regarding the use of the x-ray is well made. I believe that in every case where the symptoms continue for ten days, as in this case, there should be an x-ray examination, particularly if it is likely to be a medico-legal case. My only excuse for omitting this is that in Franklin we had no facilities for x-ray examination and the evidently good progress of the patient made me feel that it was unnecessary. I feel sure the company would have been willing to do this had I suggested it, but it did not occur to me that the man might fall into a cellar and have further injury.

As to dizziness, we all know we have many patients of sixty years and above with dizziness that have no injury whatever. The only way I can account for it is by blood vessel changes. All of these patients do not have high blood pressure, but some of them have. I would like to ask Dr. Burns the result of his trephining operation in the case he reported.

Dr. Burns: The man died. He had degeneration of the brain tissue.

Dr. Howlett: That is a point I wish to bring out, that where a blood clot has existed for some time it causes enough brain deterioration to cause death or permanent disability in most instances. Of course, in that case there is a possibility that the man may have had a subsequent hemorrhage from a small vessel, which permitted the formation of a large clot.

THINGS THAT COUNT*

C. P. Fox, M.D., F.A.C.S., Greeneville, Tenn.

I HAVE been a member of this association for thirty-six years, and until this meeting, as I remember, the sessions have always been opened with an invocation for divine guidance. I wonder if we have come to regard it as a useless formality, or has it been due to a recession of our faith and a dependence on material things alone for support? Whatever apology I might have felt like making for a paper of this character on this occasion, now I feel it may be quite timely, if only it may bring us back to thinking a little more seriously of things eternal, the only thing after all that really counts in the end.

Underlying the motive that has inspired this paper is the author's consciousness of his own failure, for so many years, to interpret the true meaning of life and the fundamentals upon which its true mission rests.

Believing as I do that the great majority of all men are laboring under the same delusion that I have and are following an illusion that must in the end lead to disappointment and failure, I have determined to make an attempt, in a humble but sincere way, to point the way to those who have not seen the "truth," that at least some may escape the ultimate failure to which most men are tending. This tendency being due to a false conception of what life's mission really is.

If we examine minutely into the lives of the people we know, I fear we will find few men content, few happy, few who have real peace and few who have a genuine hope of eternal life, however great may have been their material success. Most of those who are approaching the close and realize it, would be glad to exchange what

they have acquired in material honor, social position, and such things as the world looks upon as evidence of material success, for that real peace which comes from a life of service, and which alone can give the comforting assurance of faith and immortality.

As a foundation for the truth which I hope to present I may appreciatively quote Christ's own warning, recorded in the Gospel of Luke 12:15: "And He said unto them, take heed and beware of covetousness; for a man's life consisteth not in the abundance of things which he possesseth." A warning of the vanity of material things and their insufficiency in bringing peace, happiness and hope of immortality to us—without which there is no real success. In this same chapter He illustrates the truth of what He says in the parable of the rich man whose grounds brought forth bountifully and who selfishly and arrogantly said to himself: "I have much goods laid up in store for many years—I will say to my soul, take thine ease, eat, drink and be merry." That night his soul was required of him, and to whom did all these things belong? It may not be money or material wealth to which our ambition is leading us. It may be earthly honors, great reputation, social position and pleasure, but if our efforts are selfish, to gratify selfish ambitions and not service to our fellow men for the glory of Him to whom belongeth all wisdom, all power and all honor, then we belong to the same class as the rich man spoken of in the parable, and our souls will be required of us, and whose shall these things be? Wealth, honor and position will not buy peace, enduring happiness or immortality. A man may have all these and yet not have life. They may bring to him pleasure, physical enjoyment and intellectual pleasure. They may satisfy his carnal

*Read by title before the Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

lust and he may have a certain kind of self-satisfaction, but they cannot bring him real peace and true happiness.

Darwin, the great founder and apostle of evolution, in closing his autobiography made the following significant confession: "I feel no remorse from having committed any great sin, but have often and often regretted that I have not done more direct good to my fellow creatures." An unsatisfied life, though he had been the author of a theory that had caught the ear of more intellectual and educated people and won them as disciples than any man who had lived before or who has lived since. A man who had been accorded the highest honors that an admiring world of science could bestow. Enough, it would seem, to satisfy any man's pride and material ambitions, yet a life of the deepest regret. Why? Because, although he had added much to man's material knowledge of science and to their intellectual pleasure, he had at the same time robbed them of their spiritual peace and hope of immortality. The motive that actuated him was material and what might have been a great service became a great curse.

Only service to man and to God can insure peace, happiness and immortality. The climax of every man's life is his death. If his death is courageous, peaceful and hopeful, his life has been a success, however humble. If his death is cowardly, regretful and without hope, his life has been a failure. I grant you the vile man may sometimes die gamely, but not bravely, not peacefully, not hopefully. No man can die peacefully, hopefully or courageously who does not have faith in his immortality. And no man can have faith in a peaceful immortality who has lived selfishly and who has not been actuated by the spirit of love and service.

I hold in my hand a scalpel—in the hands of a faithful, conscientious and intelligent surgeon, actuated by the spirit of service, it is capable of being, and is, a blessing and inestimable boon to humanity in saving life, relieving pain and bringing health and happiness to thousands. In the hands of a

faithless, avaricious and unscrupulous surgeon it is capable of, and is, bringing death, suffering and misery to thousands of their fellow men and disgrace upon the profession.

As the scalpel in the hands of a good surgeon may and does yield itself to the service of humankind and is a blessing, and in the hands of an unscrupulous and avaricious surgeon yields itself to become a curse, so the man himself, the surgeon, guided by the spirit of, and in the hands of the great author of all good motives, Jesus Christ, becomes a blessing to humanity and insures for himself peace and happiness of which nothing can rob him, but guided by selfish ambitions, he becomes a curse, a blot on society, a disgrace to his profession, and insures for himself ultimately the misery which comes to a conscience stricken by the shame of wrongdoing.

Labor not, then, for the "meat that perisheth, but for the meat that endureth unto eternal life." When Peter and John went up to the temple to pray and the cripple at the beautiful gate solicited them for an alm, Peter, looking on him with compassion, took him by the hand and said to him, "Silver and gold have I none, but such things as I have I give them. Arise and walk." The cripple leaped to his feet and, embracing Peter, would have worshipped him; but Peter would have none of it, and said to him, "Give God the praise, I am only a man like unto yourself; I am only an instrument in the hands of God." This is the spirit that should actuate the doctor. Is it? If not, then he is laboring for the meat that perisheth, and not for the meat that endureth unto eternal life, and which only the Son of Man can give him, for He has promised that even the giving of the cup of cold water in His name shall not lose its reward.

How commendable are our efforts as we labor so earnestly and untiringly to save these poor mortal bodies from a few more days of pain, and usually with the hope of some material reward, but how much more worthy would it be to lead an immortal

soul to the knowledge of the "truth." As we look upon the stooped and failing bodies of some of our long and much loved colleagues who still remain, there is a certain sadness and pathos in the evidence of their imminent passing, but this sorrow is softened by the belief that their faithful and devoted life, crowned by a living faith in their immortality, is leading them to a happy eternity, where we shall ere long meet and greet them again, where we will all have a happier and fuller life, and where we shall know even as we are known. With this hope it is not so sad to say "goodbye" to our old friends and felicitate them on their journey, but without it how sad would be the thought of parting. To our young friends we would say, "Is it the eternal things you are seeking, or is it the

gratification of a temporal ambition?"

Then, "What does it profit a man if he gain the whole world and lose his own soul, and what shall a man give in exchange for his soul." It is the motive and not the deed that counts. Things eternal spring from the heart and not the hand. Reward should come from a consciousness of service and not in a return to the hand. Service alone can bring lasting pleasure and abiding peace. Eternal values reside in unselfish service and find expression in a hand guided by a heart of love. "Though I give all my goods to feed the poor and my body to be burned and have not love, I am nothing." Without it then my mission is a falsehood, my life a failure, and my goal is the grave. The things that count then must spring from the heart of love.

THE PRACTICAL VALUE OF THE SLITLAMP*

ARTHUR J. BEDELL, M.D., Albany, N. Y.

THE ophthalmologist, by using the slit-lamp, is a better diagnostician because of the knowledge gained, but let us remember that no instrument can take the place of trained observation and that mechanical aids must always remain only a help to the senses, not a substitute for them. When the Englishman, Babbage, made the first ophthalmoscope in 1847, Wharton Jones told him the instrument was of no practical value, and yet without it ophthalmology would have remained a minor subdivision of medicine. Today the better understanding of physiologic and pathologic eye changes depends upon the use of intense illumination with magnification. It is futile to attempt to check the wave of knowledge resulting from detailed study; infinitely wiser to use the force of the water to reach shores of unexplored information. As travel makes us better acquainted with peoples and countries, so journeys with the slitlamp make us better clinicians. We go to a strange, uncharted sea, we are alert and observant, we record and later digest the accumulated facts. Some deductions may be wrong, but always the sum of knowledge concerning that sea is increased. Surely there is no need of justifying ocular examination with the slitlamp, but to the skeptic we bring this message.

Before we investigate disease, we study anatomy and physiology; so in slitlamp work many normal eyes must be carefully examined as a background for future clinical reports. Ocular diseases are evidenced by variations in opacity, pigmentation and vascularization.

An increased vascularization of the conjunctiva may be local or general. The

manifestations of the local changes assist in the differential diagnosis between phlyctenule and episcleritis. The edematous zone in the phlyctenule is definitely circumscribed. The conjunctival apex is frequently eroded and the vessels always appear as minute hemorrhagic dots, the apex of the blood vessel loops. Associated with this change is the vascular extension into the adjacent cornea, which may be superficial, stromal or deep. This is almost always accompanied by some corneal infiltration which may be subepithelial, in the posterior corneal layers or endothelial. Episcleral congestion is usually more extensive, indefinitely outlined and covered by smooth conjunctiva.

The conjunctival pigment varies in the normal eye from macroscopic to microscopic collections. There is always some surrounding the limbus in the aged. There may be subconjunctival splotches of black pigment or dark brown accumulations, which may extend to the sclera. White and yellowish plaques may appear in the course of some of the unusual bulbar edemas. Those engaged in the manufacture of artificial silk may present subconjunctival white islands with granular, superficial yellowish line extending across the cornea. Pigment in some conjunctival growths is sufficiently diagnostic to warrant definite conclusion, such as melanotic sarcoma.

Pterygium has a translucent, yellowish, advancing margin with corneal and blood vessels in many layers. Trachomatous pannus is evidenced by superficial blood vessels and an accompanying infiltration with a minute ulcer depression at the end of each blood loop. As the pannus heals the vessels are obliterated.

Each layer of the cornea presents characteristic changes. There may be a super-

*Special address before the Eye, Ear, Nose and Throat Section, Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

ficial laceration in which the furled edge is easily noted or an abrasion with less definite outline. Fluid in the epithelial layer may show as a stippling of the surface or as a bulla. Infiltration may be anterior to Bowman's membrane, they may heal without vessel formation or they may involve the anterior parenchyma. The deeper ones have a rounded margin, a central depression, and a blood vessel extending to them. Such opacities have been seen covering the corneal surface. Herpes iornea, dendritic keratitis and disciformis keratitis are easily differentiated.

A knowledge of the corneal stroma and its subdivisions makes the study of the various lesions in this layer extremely interesting and throws much light on the pathologic processes. Lattice-shaped or nodular opacities are in the superficial stroma. The classical picture of interstitial keratitis is the extension of blood vessels with exudate, but clinically infiltration not uncommonly precedes vascularization, so that we must conceive of interstitial keratitis as primarily an infiltration with secondary blood vessel formation. The blood vessels are usually straight. They may be in any part of the stroma and probably remain patent even after the exudate has been absorbed. Associated with this are two unusual pictures, dark brown deposits on the endothelial surface and a dense fibrin network in the anterior chamber with distinct brown granules at the intersection of many of the fibers. In some cases there are distinct, round, sub-epithelial infiltrations.

Keratoconus is characterized by a group of almost vertical white lines at or near the apex of the cornea, so deeply placed in the stroma that they may be mistaken for Descemet's folds. Fleischer has described a granular, brownish-green pigment ring in Descemet's membrane which is said to be a symptom of Wilson's disease. Copper deposits are almost the same color and in the same tissue, whereas in siderosis the appearance is that of minute rust particles. Many old corneal scars give a yellow reflex, described by Hudson and more

recently, when linear, called Stahli's lines. Bowman's and Descemet's membranes may show ruptures and folds.

The aqueous may contain innumerable fine, floating cells, minute crystals, blood, pigment, like siderosis particles, or the deeply pigmented cells suggestive of malignant uveal disease. In children the floating cells are often deposited in an inverted triangular area on the endothelium at or near the pupillary margin. After seeing these aqueous changes it is easy to understand why there are endothelial deposits in uveitis. There may be a single deposit or the cell accumulations may coalesce and become so thick as to prevent definite ridges on the posterior corneal surface. Deposits usually cover the entire surface and only in the later stages of the disease do they assume a triangular form. The commonest type deposit is a minute, granular appearing fibrin collection which increases in size and is often pigmented. Occasionally a single pigmented area may be macroscopic and remain unchanged for years.

White deposits are most suggestive of tuberculosis, irregular white or fibrin-like deposits with faint pigmentation of focal infection, intensely pigmented ones of chronic uveal involvement and dark granules of intra-ocular pressure.

Iris anomalies must be appreciated; the remnants of the pupillary membrane, the various types of colomaba and the associated lens opacities. The usual iris changes are increased vascularization, migration of pigment and secondary adhesions. The migration of the pigment may be in a large sheet, such as follows a penetrating wound of the iris, where the stromal fibers are pushed apart and the pigment collects in the opening. After some cases of iridectomy a large uveal pigment mass collects, while after some lens extractions it is so extensive as to almost cover the pupillary area. Star-shaped pigment cells are often present on the capsule of the lens in normal eyes. Pathologic pigment collections may assume any form from large balls of dense brown to fine granules of varying shades,

including the almost black specks found in glaucoma or after iris inflammations. If an iritis has been severe, some pigment remains adherent to the lens capsule. Not infrequently an acute iritis under proper treatment will present the evidence of a broken adhesion as a long, narrow thread of uveal pigment. The neglected cases present not only the pigment accumulations but also organized gray exudate. This exudate may be capsular or subcapsular. The changes in the pupillary margin and the stroma are innumerable.

The lens or its capsule may show opacities, occasionally vascularization, frequently pigmentation. After traumatic cataract or deep intra-ocular changes the posterior cortical layers are often deep yellow. Congenital opacities may be anterior capsular, cortico-capsular, cortical, including minute white dots throughout the lens, opaque lamellae, or peripheral projections, or they may be posterior capsular. Acquired opacities may be peripheral as homogeneous extensions or gray triangles, they may be nuclear, sector-shaped or a combination of many forms.

Crevices, clefts, vacuoles and fluid, which looks like oil globules beneath the anterior capsule, precede denser opacification. The capsule later wrinkles. The cortex may be absorbed, become calcareous or pass through many stages of degeneration. In the hyper-mature cataract characteristic cell changes are evident.

Post-operative capsular changes are numerous and the vitreous study is engaging.

There are two types of traumatic cataract, the one in which the capsule is opened and the other resulting from contusion developing a posterior cortical rosette.

The zonular fibers are observed after iridodialysis and following iridectomy. These fibers are traced from the ciliary processes to the lens capsule and when broken appear as stiff, straight projections attached to the capsule. Pigmented fibers are always indicative of uveal involvement.

The pigment may be in very fine, yellowish-brown specks or large oval flecks entangled in the separate strand groups. In going over this large subject in the few minutes allotted me the effort has been to suggest some phases of pathology made clear as a result of slitlamp examination.

DISCUSSION.

Dr. J. B. Blue, Memphis: I would like to ask Dr. Bedell to go into detail about tubercular eye disease.

Dr. Arthur J. Bedell, Albany, N. Y. (closing the discussion): With the slitlamp it is possible to see every part of the eye. To see the fundus clearly we must have a patient who will cooperate and an eye without a high degree of astigmatism or high myopia. The contact or adhesion glass must be placed over the cornea preferably in the following way: The contact glass is filled with warm water and placed over the anesthetic cornea. Stand behind the patient, hold the glass with the eye surface upward between the index finger and thumb of your right hand. The patient is directed to look down while you draw his upper lid up as far as possible and the lower lid down, the glass is forced into the lower cul-de-sac. Direct the patient to look straight forward. Drop the upper lid over the glass. Tell him to close his eyes for a few seconds until the glass becomes warm.

No pictures of the fundus have been shown because the technical difficulties are so great that we do not use or advise the method for routine examination.

Tuberculosis of the fundus has not been seen by me for the reason stated. There is, as far as I know, nothing distinctive about the vitreous or lens pictures in this disease.

There are three forms of tubercular iritis; one presenting nothing characteristic, another showing large, solitary tubercles and finally the most common form, miliary lesions. These last may be in the stroma, although some observers believe that they are most frequently seen on the iris margin.

The commonest tuberculous change is in the cornea. This often consists of a peripheral infiltration involving both deep and superficial portions with blood vessels extending to each layer. The endothelial deposits are usually round or star-shaped and the most suggestive type is the large more or less rounded white mass. The presence of suspected tuberculosis can usually be proven by subcutaneous tuberculin injections.

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J. F. GALLAGHER, M.D. -----Editor

R. C. DERIVAUX, M.D. -----Associate Editor

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EDITORIAL

THE COUNCILLORS.

Some months ago a letter was addressed from the Secretary's office to every Councillor of the State Association urging that a more earnest effort be put forth to stimulate interest in the various county medical societies and in the organization of new ones in counties where possible. To that letter exactly one reply was received and the gist of that letter was in the manner of Irvin Berlin's popular song, "What'll I Do."

The Councillors occupy a very important place in the organization of a state medical society; a place, it would seem, that some of the Councillors of the Tennessee State Medical Association do not fully appreciate. It is equally true that some of the Councillors do appreciate their importance and work diligently for the betterment of medical organization in their respective districts and the state at large. This is not written in the spirit of criticism but with the hope that it may stimulate a renewed activity on the part of the Councillors.

It is fully recognized that there are counties in the state that have no local county medical society and, by the same token, no reasonable prospect of organizing one. It might be possible, however, to have the reputable physicians in these counties join a neighboring county medical organization and thus avail themselves of benefits of organized medicine. There are also county societies in the state that have a medical society in name only. They might be aroused to renewed activity through the efforts of the Councillor. There are sev-

eral sections of the state in which two or more counties meet jointly in some convenient place but still retain their autonomy. The rapid multiplication of good roads in the state has made this plan highly feasible and the results have been very satisfactory.

These are some answers to "What'll I Do." The advent of cooler weather invigorates and stimulates to renewed endeavor. It is to be hoped that the Councillors will expend some of their energy in the betterment of organized medicine in the state.

DEATHS

The following resolutions drawn up by Drs. Hopper, Crook and McClaran were recently adopted by the Madison County Medical Society in memory of the late Dr. John A. Blackmon.

"Whereas, Brother John A. Blackmon, who was a member of this society for many years and always stood ready to do his part for its betterment, and was ever willing to respond to the call of duty and the cry of the afflicted who sought his services;

"Therefore, be it resolved, That in his death our society has lost a faithful and loyal member, the community a patriotic citizen, and the church a consistent God-fearing Christian.

"Resolved further, That we express our sincere sorrow in the passing of our brother, and that we extend our heartfelt sympathy to the members of his family."

NEWS NOTES AND COMMENT

Dr. H. H. McCampbell, was re-elected School Commissioner for the city of Knoxville, September 19, 1925.

Dr. Jack Thompson has been elected Secretary-Treasurer of the Madison County Medical Society, Dr. R. B. White having resigned.

The construction of two large dining rooms at the Eastern State Hospital at a cost of \$125,000 will start within the next thirty days.

Dr. Olin West, Secretary of the American Medical Association, was a visitor in Nashville recently. Dr. West came down to enter his older son in Vanderbilt University.

Drs. S. H. Hodge, Olin Rodgers, A. G. Kern, J. H. Kincaid, V. D. Holloway and Walter Luttrell have returned from a trip to Europe, where they visited the clinics in the larger cities.

Dr. R. L. Maloney, who has been operating an infirmary for several years at McMinnville, has purchased the building in which it is located for a consideration of \$7,000.00.

Dr. E. L. Bishop, State Commissioner of Health, has been appointed to membership on the Committee on Municipal Health Department Practice of the American Public Health Association which met in New York recently.

The Knox County Medical Society went on record that all its members would vaccinate the public free of charge against typhoid if the Department of Health would furnish the vaccine and the patients come to the doctor's office. The Department of Health agreed to furnish the vaccine.

MISCELLANEOUS

THE DOCTOR'S RECOMPENSE

A little village in southern Ohio has been blessed for forty-seven years by the services of an old-fashioned family doctor. Through the seasons, for nearly half a century he has healed the sick, helped the needy and taken an interest in the lives of its patients and townsfolk—in which he has greatly resembled many another family doctor of that fine type.

He seems to have been almost unique in one regard, however. He kept books but he never sent a bill to any patient for any professional services. The patients paid if, when and what they could. Said this strange man:

"Anybody can make money. I have found my recompense in the satisfaction of service."

The other evening, in the village town hall, a host of grateful patients gave a little surprise party for the doctor. He was presented with a purse said to contain "part of the fees the doctor had forgotten." The purse contained over \$1,000. And out at the curb in front of the building he was presented with a fine new automobile, the gift of "grateful patients."

It is a beautiful story, from every aspect. The world needs more such examples of faithful, unselfish service. And it very greatly needs more such examples of sincere gratitude, joyously expressed.—Johnson City, Staff-News, Sept. 24, 1925.

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SOME PERSONAL EXPERIENCES IN PARATHYROID THERAPY*

W. K. SHEDDAN, M.D., Columbia, Tenn.

I WILL not take up the time of this Society with any long bibliography of the anatomy or the many physiological functions attributed to the structures by many of the workers in the field of experimental physiology, in the large number of the laboratories of the world, but will try to confine my paper to the subject of its title, namely, some personal experiences with parathyroid therapy.

My attention was first forcibly attracted to this subject by hearing the reading of the very able and interesting papers of Drs. Dragstedt and Luckhart at the meeting of the American Association for the Study of the Internal Secretions at its meeting in St. Louis in May, 1922, as well as the liberal discussion of those papers by a goodly number of the members present at the meeting.

I was particularly attracted to this subject by the report of the experimental work done in the physiological laboratories in which much of the experimental work was carried on, as well as the results observed by them in a limited number of clinical observations, especially as to the part played by these apparently insignificant structures in the prevention and control of endogenous toxæmias, the

result of faulty metabolic processes, as well as those caused by many types of pathogenic organisms. Especially was this true in a class of cases that presented a spastic type, such as the eclampsia of pregnancy or tetany in its many forms.

After I had used the parathyroid in a limited number of cases of a spastic type for quite some time, the report of the results of Vines and Groves of Cambridge and Manchester in regard to the results they were having in their work in a certain other class of conditions was made public something more than two years ago in many of the prominent medical periodicals of this country, as well as Europe, in which they claimed excellent results in the management of chronic suppurative and ulcerative conditions, such as chronic suppurative middle ear conditions, chronic suppurative states of the sinuses, chronic varicose ulcers of the leg, ulcers of the stomach and duodenum, as well as numerous other ulcerative and suppurative processes of a chronic type. The reasons they advanced in support of the results they claimed seemed plausible and reasonable, at least much more so than those made by a great many others working in the vast field of medical endeavor.

So, selecting what I regarded as suitable cases, I made up my mind to try out

*Read before the Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

in an unbiased way the parathyroids in this class of conditions and as a result I have more of these to report than I have of the class of cases mentioned as spastic or acutely toxic, such as are spoken of by Luckhart in his discussion in the meeting referred to in the early part of this paper. I will now give my own experiences in the following report of cases:

Case 1: Female, aged sixty-seven years, widow, mother of five children, has been more or less under my care for twenty-three years suffering principally with attacks of subacute, and an occasional attack pretty acute, rheumatism, having had several attacks of acute rheumatic iritis; also, had a great deal of trouble with gastric acidity, or pyrosis, and as a result took often repeated large amounts of sodium bicarbonate and sodium salicylate. Some two years ago this party developed paralysis agitans of quite a severe type, the tremors being most marked in the right hand, forearm and arm; also, the face, especially the lower jaw. This patient's general condition was fair; bowels moderately constipated; urine forty-two ounces in twenty-four hours; specific gravity, 1.019; reaction, intensely acid; negative as to all other tests. Appetite good, digestion for most part good, weight 178 pounds, color good, tendon reflexes slightly exaggerated. Mental condition, a slight disposition to a depressed or melancholy state, with an inclination to unnecessary worry, but not sufficiently marked to be regarded as a psychosis of any importance. This condition of the patient had existed for several months when she came under my care. The use of the sodium in all forms was discontinued, and the calcium preparations used as alkalies to relieve the gastric annoyance. Water was ordered in large amounts. She was given the parathyroids in one-tenth grain portions three times a day an hour before meals. I hoped to ameliorate her condition by this method of treatment and did not expect to make a cure. This is what has been the result up to the present time. The tremor has diminished to the place where she can now write a fairly legible hand and can carry cups or glasses of liquids to her mouth without spilling them, and in every way her condition has been much improved, and she has been made much more comfortable.

Case 2: This was a child, aged thirteen months, suffering from what, in my opinion, was a type of gastric tetany. This baby was much under-size and weight. The incisor teeth were breaking down almost as fast as they were erupted. It was thin, flabby and very anaemic; could not sit alone, and had repeated attacks of what appeared to be gastric pain or distress; and apparently a very much undernourished baby. On careful

observation of the case you could see as well as feel the stomach and portions of the intestines harden and become spastic. There were some spasms of the facial muscles, with occasionally some spasm of the dorsal muscles and the muscles of the extremities, but the primary point of trouble was apparently in the stomach, as this organ could be seen and felt to harden quite some moments before the other structures showed any disturbances. This baby was put on the parathyroid in doses of one-twentieth of a grain twice daily and proper feeding instituted; and by proper feeding I mean the mother was made to take the proper rest and to take a liberal, highly nutritious diet in liberal quantities, thus improving the quantity as well as the character of the milk. In connection with the parathyroid the child was given one-grain doses of calcium lactophosphate three times a day. This baby in the first two weeks of treatment was very markedly relieved of its spastic attacks, not having more than two to four a day, whereas before this it would often have them every half hour and frequently often-er. In these two weeks it made a gain in weight of five pounds. The color improved, and a marked change was seen in its mental condition. So at this stage of the case the calcium was given in the same doses and the parathyroid was left out. In one week the paroxysms of spasm and pain became more frequent, as well as more severe, and a loss of one and one-half pounds was noted. I then placed the child on the parathyroid again and left off the calcium salt. In a very few days the spastic attacks diminished, and it again began to improve in all respects and has continued to do so, until now at the present time it is apparently almost a normal child, it having been on the treatment for a few weeks over a year.

These are the only two cases of the truly spastic states in which I have had the opportunity to try out the agent and I am well aware that one swallow does not make a summer, yet I am much impressed with the results in these two trials. I have had a larger field in the cases of chronic ulcerative conditions and chronic suppurative processes, in which to try out the agent, but as it has only been a little over a year since I first had my attention called to the use of the remedy by the report of the work of Vines and Groves I have not had a sufficient length of time to watch the ultimate results of the cases.

Case 1: Patient, male, aged sixty-one years, had been under my care for more than a year

suffering from a duodenal ulcer. At the time he came under my care he was having a very profuse hemorrhage, blood being vomited in large quantities and large amounts passed by the bowels. At this time he gave a typical history of a duodenal ulcer. He had been under my care for more than a year before I saw the report of the work and observations of Vines and Groves. I had been able by following the method of Sippy to make him comparatively comfortable, but any break in diet or over-exertion or letting up on the use of the alkalies, and he would suffer again. So about one year ago I put him on the use of the parathyroids and used the calcium carbonate and magnesium carbonate as alkalies to keep up the alkaline condition of the alimentary tract and kept up a restricted diet for some weeks; then began to let him out on a more liberal food which was increased until he was getting a liberal diet, which he is now taking with no inconvenience. Some two months ago I left off the parathyroid, still keeping up the alkalies until two weeks ago. He has had no evidence of any trouble for at least four months. I have him report to me once a week.

Case 2: Female, aged thirty-seven years, came under my observation ten months ago, giving a history of having for some years suffered with, as she expressed it and as such cases usually do, stomach trouble. At the time I was called to see her she had a sharp attack of haematemesis and gave a typical history of a duodenal ulcer. I put her on the Sippy method of diet, giving her the calcium and magnesium carbonate as alkalies. As well I gave her the parathyroid in one-tenth of a grain doses an hour before each meal. This line of management was kept up for about five months when the parathyroid was left off, and in another month the alkalies were discontinued. She has now been entirely off of all medication for about three months and is at least symptomatically well.

Case 3: Male, aged fifty-eight years, gave a history of digestive disturbance for about two years. At the time I was called to see him he was having a very profuse hemorrhage, vomiting blood in large quantities and looked as though he would die from the loss of blood. I gave him a hypodermic of one-half grain of morphine sulphate and in a few minutes gave him one c.c. of piturin intramuscularly, after which the bleeding stopped. I then kept his stomach absolutely empty for forty-eight hours, when I began giving him small amounts of whole milk, giving him the alkalies used in the cases reported heretofore after each feeding. I began the parathyroid the second day after food was allowed. The Sippy method of diet was used in this case as in the others reported. He was kept in bed for about a month, his diet being increased in amount and character. This line of treatment

was kept up for three months when discontinued, with instructions to report back if he had any kind of distress about his stomach. He moved out of the immediate community, and I have not heard anything from him up to this time.

Case 4: Male, aged fifty-nine years, came under my care the first of August with a large varicose ulcer of the right leg just above the outer malleolus, extending back over the tendo Achilles. It had been giving trouble for nearly a year when I was consulted. I applied a solution of methylene blue to the sore, put on a slack woven bandage, all of which the patient said had been done before without any good results. I at the same time put him on the parathyroid in one-tenth grain doses an hour before each meal. In three weeks this ulcer was entirely healed and the patient discharged. Up to the present there has been no evidence of any recurrence.

Case 5: Male, aged fifty years, came under my care in September, 1923, with a large varicose ulcer of the left leg on the anterior part of the leg. It had existed for three months when he came under my care. Local applications of a solution of methylene blue, four grains to the ounce, was made once a day to the sore surface. A few layers of plain sterile gauze covered the ulcer. This was held in place with adhesive strips and a slack woven bandage put on over these dressings to hold them in place. This line of management was kept up for a month, and no improvement was noted. He was then put on the parathyroid in one-tenth grain doses thrice daily an hour before meals. With no other change in the management of the case the ulcer was completely closed in the next month, the patient was discharged and advised to report if there was any sign of a recurrence. So far he is to all appearances well.

Case 6: Male, aged sixty-one, a large man weighing 260 pounds, came under my care in January, 1924, with a large ulcer of the right leg on the anterior part of the leg. It had been present for two months and was rapidly getting larger. It was first dressed with a solution of dichloramin-T of the strength of 1 to 500. This dressing was continued for a week with no improvement in the condition of the ulcer. I then applied the solution of methylene blue, as was used in the other cases of leg ulcer reported. This was kept up for a week with no improvement. I then began the parathyroid in the usual doses. There was quite a marked improvement in the next week which continued until the sore was healed, which was five weeks, and is at this time entirely well.

Case 7: Female, aged eleven years, came under my observation in August, 1923. This patient had a very profuse pustular eruption on her hands, feet, arms and legs and in scattered patches on the body which had existed for more than a year, at times seemingly better and then

worse. All kinds of local germicides had been liberally used, and at the time it came to me it was well coated with a pretty strong ichthyol ointment. I discontinued all local treatment except cleansing measures and started the child on the parathyroid in one-twelfth of a grain doses three times a day. Under this line of procedure the case made a rapid progress to a completely apparent recovery in about six weeks.

Case 8: Female, aged twenty-eight years, came under my observation six weeks ago. She had been the victim of a chronic otitis media purulenta for a period of four years prior to the time she came under my care. At the time I was called to see the case she had an acute exacerbation of the ear trouble following an acute infection of the pharynx. At this time she had a temperature of 102, a pulse rate of 124, and was suffering severe pain from a septic neuritis, especially of the brachial plexus on the right side, as well as an acute endocarditis. At this visit remedies for the relief of pain and the control of temperature was given, and the next day I asked Dr. J. W. Wilkes of this town to see her with me and to make a careful examination of the ears. He reported finding both drums perforated and the ears discharging pus rather freely. He advised the irrigation of both ears with a hot saturated solution of boric acid, using not less than a pint to each ear, to be repeated every four hours, which was faithfully carried out. The parathyroid was given in one-tenth grain doses three times a day. The acute symptoms subsided in forty-eight hours, the patient's temperature and pulse becoming normal and the appetite returning. The patient regained her weight and color and strength rapidly; the discharge from the ears rapidly lessened, and for the last two weeks there has been none.

Now I would not want to be understood as having no disappointments in any of these various types of cases I have reported. I have had failures in some cases presenting the spastic type, but not cases of paralysis agitans nor cases of what I have called tetany of any type. I have also been disappointed in some of the ulcerative cases, but I must say this has rarely been the case.

I desire to say in conclusion that I have not attempted to report all the cases coming under my care in which the parathyroid has been satisfactorily used, but only a few of what I regard as the more typical ones, so as to call the attention of any one interested in the study of the

internal secretions to this particular phase of the work.

As I said in the beginning of this rambling paper, I was not going into the discussion of the bibliography of this subject and waste your time in restating the pros and cons of the many would-be research workers in the various physiological laboratories in the world, as they find as many or more different things to bolster up their preconceived conclusions than do those working in the field of clinical endocrinology, for the most diverse reports of laboratory findings are coming from those working in the various institutions; some of them from workers in the same cities, and from some working in the same laboratories. Again, we have some working in this field who are capable, yet trying to capitalize their capabilities in a mercenary way to an extent that discredits their capability. So I must say that about the only way I see for conscientious workers in this line is to study for yourself and think for yourself and not do as the would-be surgeons of the present time do, swallow everything that some would-be authority says, hook, sinker and line, especially if it offers a new field to exploit in or to get money out of.

This field of great possibilities is going to be brought into disrepute by some of the most capable men in this line of work, especially those in the employ of the manufacturing concerns, which concerns are doing the work an incalculable harm, by broadcasting their literature all over the land, much of which is erroneous and misleading. And the practitioner that depends on such for his information is going to be most woefully disappointed, and in all probability his patients done harm.

The lack of standardization of the organic products, except in a few instances, is an unfortunate affair in the honest attempt to use such agents. Again, the excessive cost of such products makes it well-nigh prohibitive to use them. Individuals who seemingly need them most cannot get them for the lack

of the necessary money to pay for the same.

Again, and lastly, the long time often necessary in the treatment of many of the endocrine disorders makes it often difficult to get the active co-operation of the patient and their families, so necessary to the satisfactory management of any case of almost all disease processes. The length of time and the amount of cost in a monetary way makes it prohibitive to many of those needing it most. And that would seemingly give in many instances most satisfactory results to the proper treatment.

Hoping that the discussion will make the proper amends for the many shortcomings of this rambling contribution, with its many faults and failures, I now leave the paper to your tender mercies, and the subject, to you for thorough discussion.

DISCUSSION

DR. FRANK D. SMYTHE, Memphis: Doubtless some good comes from the administration of these organic preparations but I think much of the literature that is published regarding them is not worth the paper it is written on.

DR. W. K. SHEDDAN, Columbia, (closing): I wish to emphasize that the man who undertakes to use this therapy must have other information than that sent out by the manufacturing firms. Their circulars are misleading, to say the least. Judging from the reports of Senry A. Hanover of California they will cure anything and everything. That is wrong. I have been working with this for two years. I went over to Englebach's clinic in 1912 and studied his cases and saw what many of these conditions were. I took up the wrong side when I first started, for I thought I could start with the practical side. A correct therapy of this sort is based entirely on a fundamental knowledge of the vegetative nervous system. When you get that you find you have to have some knowledge, as much as anybody can get, of modern biochemistry. When I undertook this study I found it the hardest thing I had taken up in my fifty years of work. If you do not have some knowledge of the vegetative nervous system, as well as of the biochemical changes that are taking place in the body, you had better leave this subject alone.

SOME PRE-OPERATIVE FACTORS INFLUENCING THE MORTALITY OF PROSTATECTOMY*

JOHN E. HALL, M.D., Nashville, Tenn.

SYMPOMATIC treatment of prostatic hypertrophy by the general practitioner is directly responsible for the high mortality of prostatectomy, and as a result of such treatment thousands of old men afflicted with this disease die annually. This is a harsh but, nevertheless, true accusation, since he is the one to whom the prostatic first applies for relief in the initial stages of his disease, and if at this time the patient were told that surgical treatment was the only form offering him any hope of permanent relief, and advised that such treatment should not be deferred, many would live who otherwise die.

The general practitioner comes in contact with this disease more frequently than he does any other in which surgery is so obviously indicated, yet in no other is he so prone to institute palliative treatment, regardless of symptoms. The reason for the institution of such treatment cannot be ascribed to lack of understanding on the physician's part as to the nature of the condition, for the subjective symptoms, together with the patient's age, render the diagnosis obvious.

What is the explanation of his attitude in the treatment of these patients? Is it because he thinks such treatment is indicated, and is not aware that he is dealing with a mechanical obstruction which is amenable to surgical removal only, and that statistics show twenty per cent of all such cases degenerate into malignancy? No. The general practitioner is essentially well informed, and is fully cognizant of the underlying cause bringing about the subjective symptoms.

His reluctance in advising surgical treatment may be attributed to the fact that he recalls, without having to go far back into the past, the mortality following this operation was so great it was universally believed arrangements should be made with an undertaker to conduct the coming funeral, before the operation was performed.

In order to overcome this tendency toward operative procrastination on the part of the general practitioner, it is necessary to convince him that the following statements are true: First, that prostatectomy before the advent of kidney functional tests and blood chemistry determinations, and prostatectomy at the present time, are entirely different procedures, with an altogether different operative outcome. Second, that this operation is no more to be dreaded than an appendectomy, performed upon a patient of similar age, if done before serious secondary changes have taken place in the renal and cardio-vascular systems.

He should be impressed with the fact that the constant presence of a residual urine, amounting to as much as two and a half to three ounces, is sufficient to justify one in advising a prostatectomy. This amount is enough to cause more or less back-pressure on the kidneys, and as the gland enlarges, it increases, resulting in destruction of these organs by such back-pressure and infection. Self-catheterization by the patient for relief of the residual urine should never be encouraged by the physician, on account of the possibility of resultant infection following its use. Watson compiled the outcome in 207 cases of prostatic obstruction in which self-catheterization was instituted. He states from these figures

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that during the first month following institution of catheterization the mortality was eight per cent, and in the first two months it was ten per cent. This form of treatment offers no hope of saving the patient from ultimate operation, which has to be performed under less favorable conditions than those existing before the initial catheter treatment.

Halle and Albarran denounce the use of the catheter as a palliative measure on the grounds that many cases of prostatic hypertrophy have a tendency to become malignant, and contend that since this is so no treatment other than operative is justifiable in this condition.

There is another reason why prostatectomy is looked at askance by both the laity and physicians, and that is that it is generally thought that this operation not only destroys sexual function, but desire also. This belief militates against early operation, as few men ever reach the age where they are willing to renounce all hope of sexual potency. Is it true that prostatectomy produces this result? Let us see what the urologists have to say. At the meeting of the International Urological Congress in 1920 the consensus of opinion was that following a properly performed supra-pubic prostatectomy the genital function was not endangered, but on the contrary, many of them have an increase in sexual power following this operation. That injury does not follow is explained by Blum, of Vienna, thus: "There is no such thing as prostatic hypertrophy, the real truth being that it is a neoplastic disease, or the formation of an adenoma of the submucous glands of the prostatic urethra, within the prostate. The prostate is shoved aside by the encroaching adenomatous growth, and is converted into a capsule, consisting of atrophic prostatic tissue, poor in glandular substance and surrounding the adenoma. This capsule, which is really only the atrophied prostate, contains the ejaculatory ducts, shoved aside and occluded by the surrounding pressure." He further states

that there is a rejuvenation after enucleation, due to the fact that after removal of the adenoma a regeneration of the compressed and atrophied prostate takes place. As a result, it follows that the normal function, both excretory and incretory, is resumed.

Zuckerkindl and Cuthbert Wallace agree with Blum that the operation exerts no influence on the sexual powers, other than to cause an increase in sexual desire and potency, as health and strength are regained. Zuckerkindl further states that a number of his patients had ejaculations after prostatectomy, and one of them had living spermatozoa in the ejaculated fluid.

Since the urologist is rarely referred any but the far advanced prostatic patient for operative treatment, it is not amiss to describe the typical one as he appears at this time. One sees an apathetic old man, morose and despondent, whose muscles have atrophied and withered away. His eyes are dull and vacant, with wrinkled pouches beneath them. His skin has a death-like cast, and is cold and clammy to the touch. His arteries are hardened and distended. His breath has a characteristic urinary odor, and the tongue is dry, furred and thickened. His bladder is over-distended, and not infrequently he has an overflow dribbling. One realizes at a glance that he is dealing with an old, worn-out human wreck, sick, weakened and poorly nourished from lack of food assimilation; exhausted by loss of sleep, due to getting up at short intervals throughout the night to urinate; toxic, on account of blood absorption of poisonous retained products, and uroseptic, as a result of impairment of renal function.

As an operative risk, such a man is almost a negligible quantity. However, it is expected of us to operate and functionally restore him. It is to our credit that we take these worn-out old men and successfully operate upon them. By so doing we not only relieve them of their constant suffering, but give them com-

fort and add quite a few years to their lives.

Taking a patient as described, and getting him into condition to undergo this severe operation, with a reasonable degree of safety as to the operative outcome, entails much time and close observation on the urologist's part. Pre-operative treatment may have to be continued for many weeks, or even months, in order to bring about such a result. Naturally, the first step is to empty the distended bladder and relieve the kidneys of the back-pressure exerted upon them. This in itself is a simple matter, but sometimes dire consequences follow when emptied too rapidly by catheterization, as one, or both, of two things may happen. The first is that severe hemorrhage may take place and immense clots form in the bladder. These clots can only be removed by cystotomy. Such hemorrhage is caused by the rapid release of the intravesical pressure on the distended veins of the bladder walls. The second is acute congestion of the kidneys with complete suppression of urine, in which case death may ensue. These two things happened to a patient of mine several years ago, since which time I have been exceedingly cautious in dealing with distended bladders. This applies following cystotomy in such cases. The rapid release of intra-renal pressure is followed by great dilatation of the renal blood vessels, and suppression of urine. For these reasons the emptying of a distended bladder should extend over a period of time sufficient for the readjustment of the renal and cardio-vascular systems to the diminished pressure.

The next step following bladder decompression is to bring about both mental and physical reaction from the uremic or uroseptic state. The majority of advanced prostatic patients are listless, taking little or no interest in anything, and utterly hopeless as to their outcome. The prime essential in treating such patients is to inspire them with confidence in one's ability to render them assistance. It is

necessary to constantly reassure them that they are improving, and, following operation, will be restored to health. Unless one is able to overcome their fears and doubts little can be done toward bringing about a physical reaction.

Water must be given them in large quantities to aid the excretory organs in throwing off the retained poisons. Many of these patients are unable to drink much water on account of distaste and nausea, and one is forced to administer fluids by proctoclysis, or hypodermoclysis. Normal salt solution may be used, but a five per cent solution of bicarbonate of soda is preferable, since it increases the alkaline reserve of the body and lessens the liability of acidosis. Nearly all of these old men are constipated, due to leading sedentary lives and, too, because the enlarged gland mechanically obstructs the normal passage in the rectum. Close attention, therefore, should be paid to keeping the intestinal tract flushed out with salines, as this greatly assists in the elimination of toxins.

Much discussion has taken place as to whether the bladder should be drained by the indwelling catheter, or the suprapubic tube. Personally, drainage by means of the retained catheter is preferred, as this obviates having to deal with scar tissue around the suprapubic wound at the time of enucleation of the prostate. However, in my hands, the catheter has not given satisfactory drainage for any considerable length of time. It not only has a frequent tendency to become occluded, but also to slip out of the bladder into the urethra, regardless of how much adhesive tape is used to anchor it. Another objection to its use is that urethritis almost invariably develops within a few days following anchorage, with epididymitis as a subsequent result in quite a few cases. It is easily explained why epididymitis should follow the placing of the permanent catheter, when one recalls the anatomy of the urethra. The catheter mechanically irritates the entire urethra, causing

inflammation, followed by infection. This infection involves the entire canal, and as the ejaculatory ducts open upon or within the margins of the prostatic sinus, it is conveyed upward through them to the seminal vesicles and along the vasa to the epididymes.

As previously stated, about twenty per cent of all cases of prostatic obstruction are found to be malignant, and as the application of radium is indicated at the time of operation (conceding that such a gland should be enucleated), it is imperative to ascertain, prior to operation, the presence or absence of this condition. Cystoscopy is valuable in determining this. Malignancy presents a picture of ulcerative areas, with hemorrhagic tendencies, nodular elevations and evidences of infiltrations, particularly if degenerative changes have taken place. However, many cases do not show mucosal involvement until in the latter stages of the disease. Cystoscopy should be employed as a routine in the examination of prostatic obstruction cases, if force does not have to be exerted in introducing the instrument, and the patient's general condition is good. There are quite a few cases in which the urethra is distorted and elongated as a result of the glandular hyperplasia, and this interferes with the passage of the cystoscope. However, the information gained from an intravesical picture fully justifies the bladder disturbance incident to the passage of the instrument.

The information furnished by the phthalein test and blood chemistry examination is of paramount importance in determining the renal function. The phthalein test indicates the excretory power of the kidney, while blood chemistry tells us the exact amount of waste products retained in the blood, which under normal conditions are eliminated.

Olmstead and Caulk claim there is a fairly constant relation between the excretion of phthalein and retained blood nitrogen, and they have seen no cases of nitrogen retention which showed normal

phthalein excretion. They further state it is exceedingly rare to see nitrogen retention, unless the phthalein excretion is forty per cent or less in two hours, and this is true in any type of low kidney function.

Columbet (*Journal d' Urologie*) claims the phthalein test is a better operative index than blood urea determination, stating that urea retention in the blood is in direct relation to alimentation, except when there are very advanced renal lesions, since the amount of blood urea may almost always be reduced to a safe operative point by proper regulation of diet. He believes an output of forty-five per cent phthalein in the first two hours, following intravenous injection, is sufficient indication for safe operative risk, and that this test is superior to all others, from the standpoint of prognosis in prostatectomy. Bransford Lewis, of St. Louis, on the other hand, believes the hemoglobin percentage is of greater value than the phthalein test as a factor in prognosis. He asserts that a hemoglobin percentage of sixty per cent indicates a favorable outcome, fifty per cent is questionable, forty per cent unfavorable, and thirty per cent fatal following operation.

It should not be forgotten that the quantity as well as the specific gravity of the urine are important factors, as an increased output of persistently low specific gravity indicates the presence of a low grade interstitial nephritis.

Another pre- as well as post-operative factor influencing the prognosis is the nursing of these patients. The average nurse knows nothing and cares less about nursing prostatic patients, and if she undertakes the care of such a case it is because work is slack with her at the time. One doing this special line of work should have specially trained nurses to take care of his patients, or else he will lose many whom he should not lose. Such nurses should have cheerful dispositions, as well as tact and sympathy, as these qualifications are essential in the

management of old men, who are, as a rule, babyish and exceedingly obstinate. In closing, I desire to state there are other pre-operative factors of importance, but time prevents taking them up in detail.

THE STATUS OF PROSTATECTOMY*

LYLE B. WEST, M.D., Chattanooga, Tenn.

To everything there is a season, and a time to every purpose under the heaven.

A time to kill, and a time to heal; a time to break down and a time to build up.—Ecclesiastes III, 1 and 3.

TO EVERY THING there is a season." There is a season for prostatectomy. Recent figures from twenty-five representative hospitals show a twenty-two per cent mortality in prostatectomy done by their attending general surgeons; while the urologists cite with pardonable pride a mortality of about five per cent.

This discrepancy is due not to any superior operative skill on the part of the urologists, but to a blind neglect of pre-operative and post-operative care on the part of the general surgeon. The great Corrigan, of water-hammer pulse fame, once remarked that physicians make mistakes not because they don't know enough, but because they don't see enough. It is the prostatic beam in the surgeon's eye which prevents his seeing, by means of functional tests, the secondary symptoms of the hypertrophy, which should be relieved before prostatectomy.

Each prostatic should be considered a nephritic and potential uremic until proven otherwise, and the renal pathology takes precedence in treatment as the chief complaint.

Thorough preparation, control of hem-

orrhage, lessening shock, and better exposures have made surgery what it is today. How much more essential are these basic principles in prostatic surgery, which so frequently deals with human derelicts.

Using the refined technic of today, the mortality of prostatectomy is at its lowest. B. A. Thomas asks, "What other class of patients in the infirmities of old age, called on to undergo as grave a surgical procedure as prostatectomy, are offered such beneficial results and low mortality?"

A further reduction of mortality must come by earlier treatment, and this will come about more surely and quickly by routine rectal examinations in all our physical examinations irrespective of the symptoms.

Our knowledge of the etiology and pathologic anatomy of hypertrophy of the prostate is not clear. It is generally conceded that the glandular elements show hyperplasia first; this may continue as an adenoma or, as usually occurs, the fibrous tissue, by its greater vitality as a less specialized cell, may choke off the adenomatous growth and predominate. Moullin says the hypertrophy is due to a lack of some internal secretion; Deaver thinks it is a perversion of the normal involution of the gland; Ewing says that his material points to an inflammatory origin; Sterling likens it to the abnormal involution of the female breast. "Although the prostate and the uterus cannot be regarded as homologous organs,

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they are similar in structure and would be strikingly alike if the tubular glands of the inner walls of the uterus were prolonged into its muscular substance." (1)

Some hypertrophy occurs in one-third of all males past middle life, and pathologic hypertrophy occurs in one-tenth of those over fifty-five years of age. Fifty per cent die within five years after the onset of obstruction if not relieved, and catheter life shortens this to two and one-half years. Catheter life is no longer justifiable except in those already on the threshold of the grave.

About eighty per cent of prostatic enlargements are benign, the remaining twenty per cent are malignant. The malignancy almost always begins in the posterior lobe. One-third of those seeking relief of cancer of the prostate have demonstrable bone metastases. There were twenty cases of true prostatic calculi in 3,180 prostatitics at the Mayo Clinic.

SYMPTOMS AND OPERATIVE INDICATIONS

Symptoms in the order of their greatest occurrence are: frequency, difficulty, pain, incontinence and retention.

With a demonstrably enlarged prostate and symptoms of frequency or a residual of one ounce or more at several examinations, prostatectomy should be advised.

The surgeon must see the patient in the act of voiding to judge intelligently the real difficulty. Pain in the perineum in the absence of other symptoms is frequently relieved by x-ray or radium. Acute congestion may be responsible for the enlargement, and after subsidence no true hypertrophy found. Atrophy of the prostate may at times give the clinical picture of hypertrophy. There is nothing in the symptomatology which differentiates benign from malignant enlargement of the prostate. Hematuria is slightly more common in the benign hypertrophy. Vesical stones or diverticula are present in fifteen per cent of cases of prostatism.

X-ray, radium, vari-colored lights, massage, and medicated rectal instilla-

tions are merely temporizing makeshifts. Surgery is the accepted treatment, and morbidity varies directly with the duration of obstruction.

PRE-OPERATIVE PREPARATION

The operability of the patient is the first consideration. The vast majority are operable if they are carefully prepared. In fact, the pre-operative treatment is the most important part of successful prostatectomy.

The renal function is estimated by the phenolsulphonaphthalein elimination, urine concentration tests, and blood urea nitrogen determinations.

It is valuable to grade the condition of the cardio-vascular system, the pulmonary condition, the nervous system, and the renal function. In this way one can get a rational perspective; laying the blame for each functional error at its causative source and judging the potentialities of the human organism as a whole by the separate functions of its component parts.

If the symptoms are relatively mild and the functional tests are good, the patient may be prepared for operation in a few days.

I believe it wise to use digitalis in moderate doses in all cases, also to give calcium lactate or chloride in an effort to increase blood coagulability.

In the cases with more severe symptoms the time of preparation is variable. Where possible to introduce a catheter without trauma, it is better to retain this until operation, removing the catheter and irrigating the urethra every three days. Frequent catheterization is not sufficient and becomes very painful. Only about one per cent are unable to retain a permanent catheter. The scrotum is elevated by an adhesive bridge, so there is no dragging on the vas. With this method there is no greater incidence of epididymitis than is seen with suprapubic cystostomy. Suprapubic drainage is reserved for the very old and decrepit, and for those on whom we are unable to pass a catheter.

If there is a large residual or acute retention the bladder should be emptied gradually. von Zwalenburg (2) first pointed out the now well verified fact that sudden reduction of intravesical pressure and its resulting "renal glaucoma" causes a diminished renal function and congestion throughout the urinary tract, with resulting edema and hemorrhage. This may be sufficiently severe to completely suppress renal function. If the sudden release does not result in complete suppression, the edema and hemorrhage make the area a fertile field for infection.

O'Connor (3) has demonstrated the rapid fall of blood pressure after suddenly emptying the bladder, which further decreases elimination through the already edematous kidneys. If the bladder is emptied gradually against continuous pressure, by one of the various methods, the blood pressure falls slowly and the edema is reduced to a minimum. Such an emptying may require from three to five days.

The synchronous edema of the kidneys and low blood pressure combine to give a dangerously high nitrogen retention in these already potentially uremic subjects. By gradual emptying and forced elimination the nitrogen isn't so dangerous a factor by the time the blood pressure has reached its lowest point. (4)

Bush (5) advances a rather unique explanation of the renal damage which is generally conceded to be due to reflex pressure. He concludes from clinical and experimental data that the renal dysfunction is a condition primarily due to neural reflexes coming from the area of the trigone by way of the hypogastric afferents and out through the eleventh and twelfth thoracic autonomies to the kidney.

Many patients commit the common surgical sin of procrastination, and seek aid only after they have acute retention. Frequently they are admitted to the hospitals, after unsuccessful attempts at catheterization with considerable urethral trauma. These comprise the only

emergency cases; they should have an immediate cystotomy.

Perhaps the nicest cystotomy is done by introducing a trocar and cannula into the bladder under local anesthesia. The cannula is removed and immediately a soft rubber catheter is forced through the trocar by means of a stillette, and the trocar withdrawn. The bladder wall fits snugly around the catheter, preventing leakage, and very little urine is lost in the procedure.

Fluids are forced to the limit. These unfortunates are greatly impressed by a glass of medicine every hour, which consists of water with a few drops of the elixir of iron, quinine and strychnine to give it a taste. Fluids if necessary may be given by rectum, hypodermoclysis, or intravenously.

With daily blood pressure readings and frequent phthalein tests we note a gradual improvement. The blood pressure rises slightly after its initial fall following bladder decompression and remains practically constant. Thomas (6) says do not operate if the systolic pressure is below 110 mm., or the diastolic below 60 mm. Hg.

The phthalein elimination rises gradually and becomes stable, the blood urea decreases in amount. The majority will show a phthalein elimination of fifty per cent or above before they become stabilized. The risk is decidedly bad if the phthalein elimination does not rise to thirty per cent or above in two hours. In these cases, with low phthalein output, blood urea determinations are most important as a check; the nitrogen retention must be relieved before operation, or decreased until the blood urea is forty mgm. or less per 100 cc.

Concentration tests are valuable; a low fixed specific gravity with an inability to show a specific gravity of 1.015 or above when fluids are restricted, gives a poor prognosis, the picture of a chronic glomerular nephritis with decided uremic tendencies. It has been recently stated that the phthalein test is not reliable because

it acts as a diuretic in some, which gives a large percentage of elimination when there is definite renal damage. I have never observed this action, nor have any of my colleagues whom I have questioned. A. N. Richards (7) has never encountered such an action, and says, "as a matter of fact, diuresis per se does not appear to have much influence on phenol red elimination."

Infection is responsible for about one-third of the mortality, directly or indirectly. It is to be controlled as far as possible by daily irrigations. Almost all prostatectomies, by whatever route, show bacillus coli in the urine after operation. All cases which have been repeatedly catheterized are infected and most of those with any degree of residual are infected. Many infected cases may have quite a reaction due to an exacerbation of an old nephritis. Intravenous antiseptic solutions promise these some hope. It is interesting that cases infected before operation do not have pyelonephritis so frequently nor so severely as the uninfected, due probably to the active immunity developed.

Cystoscopy should not be done in all cases. In the more severe cases, unless a more accurate diagnosis is essential, it is omitted. When employed it is safer to determine the renal function before cystoscopy. A catheter or urethral chill in a bad risk may prove disastrous. Bladder stones and diverticula, which occur in about fifteen per cent of these cases, are found at cystoscopy which might easily be missed at prostatectomy. Renal examination may be entirely negative or by it we may learn the complete picture. When rectal palpation does not reveal sufficient pathology to account for the symptoms, cystoscopy should be done. Cystoscopy removes the operation of prostatectomy from a rather blind to a sound surgical procedure. Damski (8) reports a myoma of the prostate the size of a child's head which bulged in the perineum, while the cystoscope revealed a normal bladder.

All manipulations must be done very cautiously, as the geriatrist has little natural resistance to fall back on, and seemingly slight surgical insults pay heavy penalties. Patience and care in this pre-operative period will be rewarded by a lower mortality. It has been rightly said that it is better to wait a week too long than operate one day too soon.

OPERATIVE ROUTE AND TECHNIC

Sacral, caudal, or epidural anesthesia, into the sacral hiatus, is ideal in bladder and perineal surgery in ninety per cent of the cases. It has no mortality. In fact, it is rapidly supplanting general and spinal anesthesia in prostatic surgery. In the ten per cent or less of failures gas oxygen is the next choice. With sacral anesthesia a hurried cystoscopy may be done immediately prior to operation. The sixty cc. of one per cent novocaine gives an anesthesia lasting from two to four hours; so there is no hurry.

As to the choice of the operative route, we should judge first the needs of the patient as an individual case; second, the mortality and morbidity statistics by representatives of the two schools, suprapubic and perineal.

The surgeon should be prepared, mentally and mechanically, to do either operation, let the best interests of the patient decide the route, and not any prejudice or personal whim of the operator.

The large growths in the bladder, whether of median or lateral lobes or both, and cases complicated by calculi or tumors, call for suprapubic prostatectomy. The perineal route is reserved for the small inflammatory or fibrotic gland. If we grant these indications the vast majority will be done suprapubically. Mortality and morbidity, in the hands of good general surgeons, are less by the suprapubic route. For these reasons the suprapubic route is far more widely used than the perineal.

The chief factors responsible for unsatisfactory results with the suprapubic method are incomplete removal of the

gland, especially that portion lying anterior to the urethra, and too extensive trauma to adjacent tissues.

The vast majority of patients can be prepared for operation by the in-lying catheter. A light breakfast is allowed, forty minutes before operation, sixty cc. of one per cent novocaine solution is slowly injected into the sacral hiatus, and the usual dose of morphine given to allay anxiety.

The bladder is washed out and slightly distended with a warm antiseptic solution, injected through a metal catheter with a Guyon curve. The line of the suprapubic incision is infiltrated with novocaine and incised, opening down to the bladder. The peritoneum is pushed back from the bladder by a gauze-covered finger, and by cutting down on the metal catheter the bladder can be opened with certainty and not the peritoneal cavity, as has occurred to some of our best surgeons. The bladder contents are removed by suction.

The orderly now inserts a gloved finger into the rectum, and the mucosa is torn or better cut at its most prominently bulging point. A line of cleavage is gently but firmly sought; it may be necessary in enucleating to remove the glove. The gland is progressively loosed from its sheath and enucleated. Hemorrhage is looked for, but not expected. If after a few minutes' wait there is no gross hemorrhage, a gauze sponge is placed in the prostatic pouch on a sponge stick with some pressure; much as the tonsillectomist controls the hemorrhage of the tonsillar fossa. If there is a spouting vessel it must be ligated, if necessary, by enlarging the wound and using the Trendelenburg position.

The open visible method of Judd is a more sound procedure, but it is used only where hemorrhage indicates its larger opening and exposure.

The dimensions of the prostatic pocket are estimated, using the first and second fingers as calipers, and this estimate recorded, as it may be of some value if

there is bleeding and a tampon is pulled down into the pocket.

A soft rubber catheter, No. 20 F., is introduced through the urethra and a silk or linen thread sewed and tied to the eye end and running out the wound. In this way we have absolute control of the catheter; it can be pulled in or pulled out, without fear of making a new passage. It can also be used if needed to pull a tampon down into the prostatic pouch to control hemorrhage.

A large fenestrated rubber drainage tube three inches in length is sewed into the upper end of the bladder wound and the bladder closed. Two mattress sutures threaded through small rubber tubing to prevent their cutting the skin, are used as stays. The large drain is now pulled down to the lower end of the skin wound, and the fascia and skin closed separately, leaving a small rubber tissue drain in the space of Retzius.

The hemorrhage hazard is greatly overrated. Folsom (9) collects 3,500 cases with only four deaths due in any way to hemorrhage. He concludes that the best preventative is a careful anatomic enucleation of the prostate without undue haste, and not the slap-bang methods of lightning operators or the "stop-watch surgeons, who can be truly called carnivorous operators."

POST-OPERATIVE CARE

Pneumonia is one of the most frequent causes of death, hence a pneumonia jacket is put on all cases before they leave the operating room.

They must drink large quantities of water after, as well as before, operation, and with the use of sacral anesthesia the water can be begun immediately after or even during the operation.

The patient must be watched very carefully in this period; nurses and orderlies, unless very carefully trained in the work, should not be depended upon.

The drainage requires attention. If the large tube with a connection draining into a bottle is kept open and the lower end frequently washed out and left full

of fluid to maintain siphonage, the patient will be kept clean and dry. If there is great difficulty in this, the suction bottle of Davis is simple and requires little attention.

Digitalis is continued. Fluids are forced as before operation, if not well tolerated by mouth, the rectum, under the skin or the intravenous infusions are given. In the very old cases, the very worst risks, it is well to have the blood matched with a suitable donor so that transfusion can be done if needed.

The patient's position in bed is frequently changed, the bladder is irrigated twice daily with warm boric acid. He sits up on a back-rest on the fourth day, the large drain tube comes out at the end of a week and he is put out of bed in a chair on the seventh day. At least these are the averages; if the patient is not inclined to cooperate, he is literally made to take fluids and to take some form of exercise in his convalescence. The upsets, complications and trials in this post-operative period will differ in each case; it is a time in which one appreciates a thorough training in such cases.

Economic necessity frequently takes the patient out of the hospital before the wound has completely healed, and while there is considerable pus in the urine. A rectal examination should be a routine when pus in the urine persists, for in this manner we frequently find a vesiculitis which is keeping up the pyuria.

SUMMARY

- I. Symptoms and Operative Indications.
- II. Pre-Operative Preparation:
 - a. Thorough physical examination
 - b. Renal function
 - c. Routine digitalization
 - d. Coagulability
 - e. Permanent catheter
 - f. Gradual bladder decompression
 - g. Forced fluids
 - h. Cardio-vascular stability
 - j. Antiseptics
 - k. Cystoscopy and rectal examinations.

III. Operative Technic:

- a. Sacral anesthesia
- b. Suprapubic versus perineal route
- c. Control of hemorrhage

IV. Post-Operative Care:

- a. Continue fluids and digitalis
- b. Free drainage and irrigations
- c. Pneumonia prevention.

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DISCUSSIONS ON PAPERS OF DR. JOHN E. HALL AND DR. LYLE B. WEST

DR. TOM A. BARRY, Knoxville: There is so much in these papers to agree with and so little to disagree with that I can only emphasize the points that have been made. The refinement in diagnosis has arrived so close to perfection that the only further decrease in mortality can be had by getting these cases earlier, and here the general practitioner can aid us very materially. There is just as much foundation and indication for prostatectomy as for any other class of surgical procedure, and these patients must not be considered as they were formerly. Among the factors entering into these cases the blood pressure is very important. No patient should be operated unless the blood pressure comes to a fixed point and stays there. Often after the first step of the suprapubic prostatectomy the blood pressure will go up and stay there and it is at this time that the patient should be operated. It was formerly felt that the man who was skillful in enucleating the prostate was the only man who had good results; but a prostatectomy is influenced by many other things that must be considered, the kidney and liver functions as well as the heart

and arteries. We should look at the heart condition with a great deal of consideration.

As to anesthesia, I think the sacral and parasacral is ideal. If one is not adept in this the use of nitrous oxid will usually suffice.

Attention has been called by McNider to the relation of age and danger of anaesthetics on kidneys. In old animals anesthetized with ether the kidney function was very materially reduced, while in the younger animals ether had no effect whatever on the renal function. In the badly infected cases before operation we should try the new urinary antiseptic, hexylresorcinol. This has not been on the market long enough to pass final judgment on it, but the preliminary reports are interesting. The wounds heal more promptly after administration of this drug.

I disagree with Dr. West and believe that a cystoscopic examination should be made in all these cases before operation. This should not be done the first time the man is seen for a lot of these patients develop chills and uremia if this is done at first in a badly infected prostatic. The patient should first be treated by indwelling catheter and brought to as nearly normal as possible, but I believe they should all be cystoscoped before operation. On rest in bed and an indwelling catheter for a few days the bladder can be emptied completely and safely. Cystoscopic examination is the only reliable method of determining the presence of diverticulæ, stones, etc.

DR. JOSEPH H. SMITH, Memphis: The essayists have very forcibly brought out the necessity of a due appreciation of the importance of the preoperative technic in the control of prostatic cases. Thereupon depends the difference in the low and high mortality in prostatic surgery. There is no doubt but that the statistics that Dr. West gave us and the difference between the mortality rate in the hands of the urologist and the hands of the general surgeon is due to lack of appreciation on the part of the general surgeon and lack of understanding on his part of the meaning of these preoperative procedures. A difference in mortality of twenty per cent and five per cent is great. To my mind there is no doubt but that sometimes the general surgeon is too anxious to operate too early on prostatic cases. The urologist, knowing the significance of and appreciating these preoperative necessities does not operate too early but waits until the condition of the patient is propitious.

What is the preoperative procedure in the removal of prostates and why are these precautions carried out? It does not make much difference whether we can bring our patients somewhere near normal in kidney function, blood tension and so forth in relieving back pressure by the catheter or by a suprapubic cystotomy. That is an element that becomes a personal equation and is up to the urological surgeon, and is based upon

his experience in handling these cases. There are six points to consider in the preoperative technic.

Consequently, the reasons for suprapubic cystotomy or drainage otherwise is to relieve the infection in the bladder, the back pressure on the kidneys and, in cases of suprapubic cystotomy, the removal of stone, and to increase to as nearly normal as possible the functional output of the kidney, to lower the toxemia of the congested kidney to somewhere near normal, and also to lower the blood urea and nitrogen picture to reasonable limits. This can only be brought about by drainage and building the patient up to the point where we desire him to come. These are the points we endeavor to take care of and in this way bring our patient to the point of being a safe risk, by this preoperative technic.

As to whether or not a perineal prostatectomy is indicated or a suprapubic, I think that is a matter of personal equation. In most cases I think the suprapubic route is preferable.

I cannot agree with the idea of our doing a cystoscopic examination in these prostatic cases. I cannot see that we can gain much information in these cases by inserting a cystoscope and producing trauma, which will often cause acute irritation and force operation before the patient is ready and before you are ready to perform it. That step may be necessary in some obscure cases where the diagnosis cannot be cleared up by other methods. By the injection into the bladder of sodium bromide in the ordinary cases the roentgenogram will bring out points that are often obscure from the urinary findings, and I believe this is all that is necessary in the average case.

Dr. West brought out the point that the general surgeon or practitioner comes into contact with these cases before the urologist. It is true that we seldom see them before they have had some kind of treatment. To try to accomplish anything in these cases by continuous catheterization is wronging the patient, for under such treatment his expectancy is not more than one or two years.

DR. H. L. FANCHER, Chattanooga: If there could be a happy medium between the general surgeon and the urologist the poor old fellow with an enlarged prostate would perhaps fare better. The urologists depend almost entirely on the kidney function tests and preoperative preparation, while the general surgeon is inclined to take the symptoms in their sum total and relieve the man of his urinary obstruction. There is one thing that is true, that the urologist has helped the general surgeon in testing out the kidney until we know what it will stand, while the general surgeon says the urologist is wearing his patient out and doing nothing. Both are right and both are wrong. It is not necessary

to do a functional test on every case and it is not necessary to catheterize every case, and yet in those things the urologist insists upon I believe we as general surgeons test the eliminative power of the kidneys by the old functional test of dry and wet diet, determining what variability there is in the specific gravity of the urine. If on a wet diet the urine can be run down to 1005 and on a dry diet it can be run back up to 1018 or 1020 we know there is a flexibility of nitrogenous elimination that the kidneys will be able to take care of. A prostatectomy is not such a very great strain on any man. In our zeal about the condition of the kidneys we lessen our attention to other things; namely, the heart and lungs. As Crile has put it, what has the kinetic drive done to that fellow, how exhausted is he and how exhausted are you going to keep him after you operate? There is no place where one must look so closely to the care of the patient and so little to the disease as in these old prostatic cases. If he is approaching the catheter period or is already in it what are you going to do? It is not so important that the man shall live as that he shall live well. There are still differences between the general surgeons and the urologists and each must adopt the other's method before we can properly care for these old men.

DR. GEORGE R. LIVERMORE, Memphis: I would like to emphasize a few points that have been brought out. I think Dr. Smith is correct when he says it makes little difference whether we accomplish the result desired by the catheter method or by suprapubic drainage. What we are after is to get the kidney in the best possible condition and stop the back pressure. I believe the blood chemistry determination to be more accurate than the phthalein test. Dr. West said he believed it was supposed to act as a diuretic but he had never seen it do so. We have seen cases in which the blood chemistry showed a large amount of urea and creatinin with a high phthalein and vice versa. I prefer to go by the blood chemistry rather than by the phenolsulphonephthalein, although I like to have both agree. I think Bugbee has stated it better than anyone in saying that these patients should be stabilized. The general well being of the patient should remain stationary day after day, his blood pressure, phthalein and blood chemistry should remain at about the same level before he should be considered in condition for the operation.

One feature the Doctor mentioned was hemorrhage, but he laid so little stress on it that I was surprised because I believe that hemorrhage has more bearing on the mortality of prostatectomy than almost any other thing. He says there are only a few cases in which hemorrhage has been known to cause death. Yes, but he did not mention the uremias and shock that unquestionably the hemorrhage was accountable for. Therefore,

I think any surgeon who does a prostatectomy and makes no provision for the control of hemorrhage is derelict in his duty to that patient.

DR. IRVING SIMONS, Nashville: I think both the essayists have stated the subject extremely well. They have studied it from the standpoint of the urologist and have stated it in that way, and that is the standpoint that should be accepted in this subject. Some years ago Thomas, of Philadelphia, showed that prostatectomy had a mortality of twenty to twenty-five per cent in the eastern hospitals at that time, in the hands of general surgeons. He showed also in analyzing 1,000 cases from the literature, many of them from the Mayo Clinic with a mortality of five per cent, and a large number from Young's department at Johns Hopkins with a mortality of 3.5 per cent, that there was a vast difference in the mortality in the hands of specialists. He showed that either type of operation could have a low mortality. On investigating his work we found that the reason must be not that the urologist had better technic or better skill in removing the prostate, but that he took the time before attempting the enucleation to prepare the patient to come to the operating table.

I feel that Dr. West in mentioning that about fifteen per cent have stone and diverticula and ten per cent have carcinoma has shown that cystoscopy is very important, if it can be done without great trauma to the urethra and without producing depression in the old men who are not fit subjects for any manipulation. It is extremely important to know if we are operating on a carcinoma of the prostate, which is practically carcinoma of the bladder. It is important that we should know that the patient has a diverticulum or a stone. I believe these considerations are sufficiently important to induce one to make cystoscopic examination with a small instrument.

As to the method of operation, I think each man should decide for himself how he shall do it. We work in all sorts of hospitals, some with good technic and some with fair technic. We have all sorts of assistants, some of whom are interested in genitourinary work and some of whom are not. I think the fact that Young and those men get better results is because they have assistants whom they can depend upon through a series of years.

I think that prostatectomy is divided into three stages: first, the catheter type of decompression, then the suprapubic stage and then the enucleation of the prostate. If one can do a portion of the decompression of the kidney through the bladder, so much the better. I think we gain more by doing this even if we decompress for two or three days. The patient is then ready for the next stage, the suprapubic cystotomy done under local anesthesia. I would rather not do the suprapubic operation without using the catheter for a

few days first. I feel that I have obtained better results in that way and have had no more difficulty with epididymitis than in the other way. The third stage has been best performed in my hands under gas-oxygen anesthesia. I think with practice this can be done properly by the operator. It is a little hard on the hand of the operator, but it can be done if practiced.

DR. JAMES C. WILSON, Rockwood: I want to stress what I think has been brought out in the discussion of these papers, and that is the fact that the expectancy after we begin to have symptoms of obstruction is five years, and the expectancy after beginning the use of the catheter is three years. When we know this from statistics it behooves us to do these operations freely. We should not wait until the men get to the catheter stage. I think we should begin to educate along that line, that of the ages of men, so that they will know what to expect. If we wait until the catheter stage is reached there are infections in the urethra and bladder, in the ureters, in the kidneys, and then it is very hard to get that patient into condition where we can have good results from an operation.

Another thing I wish to call to your attention is the method of preparing these patients after they get to the catheter stage with the cystitis and oyeletitis, and that is the use of the new remedy that was perfected by Dr. Veader Leonard of Baltimore, hexylresorcinol. I think that means more to the genitourinary man than any other discovery of recent years. This agent is supposed to have a germicidal power forty-five times greater than that of carbolic acid, yet it can be taken into the stomach and eliminated through the kidney without any damage to the kidney or urinary tract, and this simplifies the prostatic cases with infection of the bladder and kidney. I have tried this out several times and know that it gives good results, and that we can clear up a bladder or kidney that has seemed to be almost hopeless.

DR. RUSSELL A. HENNESSEY, Memphis: One thing Dr. West mentioned was the van Zwaluwenberg decompression. I have found it possible to use an indwelling catheter in eighty per cent of these cases. They are intolerant for a few days perhaps but after that they can be handled and this is better than the sudden releasing, with the vasomotor shock, the peritubular suppuration, uremia and death. I think, as Dr. Simons brought out, that the catheter should be given preference over the hurried suprapubic incision.

DR. JOHN E. HALL, Nashville, (closing): I desire to express my appreciation to Dr. Barry

and the other gentlemen for the liberal discussion of my paper.

In answer to Dr. Smith, it was stated that cystoscopy should be employed as a routine if force does not have to be exerted in the introduction of the instrument, and if the patient's general condition is good.

Dr. Fancher said that catheterization is not essential. How may the amount of the residual urine in the bladder be determined without catheterization, after urination? He also said that too much stress is laid on the renal function and not enough on the cardiovascular. These conditions are interdependent.

Dr. Livermore said hemorrhage is exceedingly important. I will agree with him that this is true, especially where the one stage operation is performed. Free bleeding is very much more apt to follow the one stage operation than it is the two stage, for the reason that following the insertion of the suprapubic drainage tube there is a shrinkage in the size of the gland, and a diminution in the vascularity of the capsule and bladder walls.

Like Dr. Simons I believe that preliminary catheterization should be instituted before cystotomy is attempted.

I think Dr. Wilson's point about early operation is exceedingly important, for all of these cases later on develop secondary pyelonephritic changes.

DR. LYLE B. WEST, Chattanooga, (closing): We are apparently very much of one mind. Dr. Livermore is exactly right in saying that we should be prepared to control hemorrhage, but my idea in trying to hit the high points in such a big subject, was that hemorrhage has been given a larger place than is justified, in that a very small number of prostatectomies have any serious amount of hemorrhage. Many mechanical devices have been advised for its control.

These patients have to keep the water up after operation just the same as before and with the sacral anesthesia it can be done very easily. I recall a patient, seventy-two years old, who was operated upon at 10:00 o'clock in the morning, was returned to bed at 11:00 o'clock and at 12:00 o'clock, due to some mistake in the ward, he received the regular diet of turnip greens, a rather hard boiled egg on top of that, corn bread and buttermilk, and he ate with greater relish one hour after being returned to bed than he had before operation.

I believe these patients should be gotten up as soon as possible after operation, water should be forced and they should be encouraged in the idea of getting well.

THE ESOPHAGOSCOPE AS AN AID IN DIAGNOSIS*

RICHMOND MCKINNEY, M.D., Memphis, Tenn.

DIAGNOSTIC methods which have the virtue of being exact are not too common in the practice of medicine, so any procedure that may help to eliminate guesswork should have general recognition. With direct esophagoscopy by means of the esophagoscope we have a means of practically definitely determining the character of esophageal lesions.

Esophagoscopy to the beginner is not as simple as is mah jongg, for the introduction of the esophagoscope is not as easy as passing a stomach tube, and the revelations of the visual field are sometimes confusing, but it is experientia docet in this, as in other things requiring practical application.

A diagnosis in cancer of the esophagus in its early stages is much surer when esophagoscopy is practiced, and cardiospasm is both readily diagnosed and treated through the esophagoscope.

But it is in the obscure lesions that we feel most inclined to invoke the aid of the esophagoscope. Some cases in point may well be cited.

A woman thirty years of age, living near Tupelo, Miss., was referred to me by Dr. J. G. Lilly of Tupelo, with a history of having swallowed a plum seed about three weeks previously. There was no unusual difficulty in deglutition immediately following this, but gradually it became quite painful to swallow any kind of food, and she would expectorate small quantities of blood. At the time she was sent to me she was requiring opiates in order to sleep. Roentgenography of the trachea and esophagus, done in Tupelo, failed to reveal the foreign body.

At the Baptist Hospital, without anesthesia, save a small quantity of ten per cent cocain solution around the gingival margins and to the hypopharynx, I passed a seven mm. Jackson esophagoscope slowly down the esophagus, and about six to eight cm. below the crico-pharyngeal constriction, on the posterior wall of the esophagus, found an ulcerated area of the mucosa, which I judged to be about the size of a ten-cent piece. This was covered by thick mucopus, which was removed with a swab. Nitrate of silver solution, ten per cent, was applied to the ulcer. A few days subsequently this patient returned with a report of great improvement. She was again esophagoscoped, and the ulcerated area, which appeared nearly resolved, treated in the same manner. I judge she has entirely recovered, since she was to return in ten days if not, and she was last seen about the middle of July.

A man fifty-four years of age was referred to me in July, 1924, by Dr. James Dillman of Paragould, Ark. He gave a history of increasing difficulty in swallowing for two months. Clotted blood occasionally was expectorated. Rapid loss of weight, normal being 175 to 180 pounds, and now 146. Some pain in the epigastrium.

Fluoroscopy showed a sharply defined constriction at the cardiac end of the esophagus, with some infiltration. Atropin in large doses was given, but the picture did not change. Esophagoscopy showed an annular constriction at the cardiac end, with infiltration. The x-ray report was not positive as to malignancy, but the opinion given by me, from esophagoscopy, was that the condition was malignant. The patient returned home, with a promise to return to Memphis for further investigation in a month, but in-

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stead of doing this, took the Abrams treatment for cancer. The result was that he came back to me last June, a mere shadow of his former self, weighing 128 pounds, and fluids scarcely passing through the esophagus. The infiltrated area had increased, and the edges were irregular. A gastrostomy was necessary in order to prevent death from water hunger.

A woman of seventy-eight, a transient resident of Memphis, consulted me concerning regurgitation of food for several weeks. No pain was experienced, but she complained of a fullness in the upper portion of the throat.

Esophagoscopy was resorted to, and beginning just below the crico-pharyngeal constriction an annular stricture was found. This extended several inches, and a No. 22 Jackson bougie was passed with difficulty. Roentgenography revealed an infiltrated area surrounding the mediastinal portion of the esophagus that was several centimetres in thickness. The futility of endeavoring to dilate this stricture was revealed by the esophagoscope, so gastrostomy was advised. This charming old lady, for such she is, is still living in comfort, being nourished through her tube, although the gastrostomy was done several months ago. I may add that metastases were found throughout her body.

Cancer of the upper portion of the esophagus is by no means common, the

cardiac end being the site of predilection. The stenoses that I have seen in the upper portion of the esophagus have usually been of a simple inflammatory type. An esophageal stricture of any kind at the cancerous age should be carefully studied esophagoscopically. We know, of course, that the mortality in cancer of the esophagus is just one hundred per cent, but we also know that spasms, syphilitic strictures, traumatic strictures and simple inflammatory strictures, all of which may occur at the cancerous age, and give in the early stages symptoms of great similarity, yield to treatment, in which the esophagus plays an important role.

Some months ago I reported the case of a thirteen-months-old baby with a spasmodic stricture of the esophagus, which was both diagnosed and cured by means of esophagoscopy. Without the use of the esophagoscope diagnosis would have been guesswork, and treatment perhaps would have been by blind bouginage, with its attendant danger.

This article may be regarded as a brief for the esophagoscope, but an instrument of such precision, free from danger and of not much discomfort in competent hands should not require the use of a billboard to extoll its merits. On the contrary, it should be part of the routine examination of the clinician, where the least element of doubt enters into the diagnosis of esophageal lesions.

FIRST AID TO INJURED EYES*

DR. POTTER, M.D.

THIS is a subject that is interesting to me as an oculist, and I am sure is of interest to every practitioner present. It is interesting to you because a great majority of these cases fall into your hands for first aid and the favorable outcome of the case often depends upon the first attention the patient receives. It is interesting to me and other oculists because we know how important it is for these injured eyes to have proper care in the very beginning. I have always been under the impression that an essayist should as a rule endeavor to present a paper which will be more or less interesting to all his hearers rather than some highly technical one that reaches only the very few. It was this thought I had in mind when I selected this subject.

In all industrial centers there are a great number of injured eyes, ranging from the slightly abraded cornea to the complete destruction of the eyeball, and so much significance is attached to these injuries that some of the companies or corporations have established first aid depots, in charge of trained nurses, where the injured may receive prompt and careful attention. Not only this, they are giving a great deal of thought to the prevention of injuries, especially in the steel mills and railroad shops, but the most usual difficulty is in getting the workers' co-operation. The most practical device would be some kind of goggle to be worn by the worker, but the average man would rather take a chance of losing an eye than wear the ordinary goggle.

The prevention of eye injuries is a big subject within itself, however, and I do not wish to take it up in this paper.

The first thing I wish to impress upon you is the importance of considering every injury to the eye, regardless of how slight it at first appears, as serious. If we always keep this in mind it will save our patient a great deal of trouble, and, I assure you, will not injure our reputation as careful, conscientious doctors. Very often we see a patient sacrifice an eye that could have been saved to him, had the insignificant injury been considered as serious, and cared for in the proper manner.

The patient himself is to blame in a large number of instances, and the bad result is due to his not consulting a doctor at the proper time. It is the nature of man to "postpone until the morrow what he should do today," and it is for this reason that the patient fails to present himself in the majority of instances, before serious complications have arisen. I hope to see the time when industrial workers, shopmen, miners, smelterers, quarrymen, railroad men, etc., will hasten to the doctor with as much dispatch as they do to the "official foreign body remover"—the same being a greasy-handed, dirty-fisted individual who has acquired more or less dexterity in manipulating a match or a pencil, and oftentimes succeeds in removing the offending object without harm to the patient. There is one of these fellows in every shop or factory. More often, however, the patient presents himself the next day with a well marked ulcer of the cornea, which is much more difficult to heal than to prevent if treated properly in the beginning.

It has been said, and I think it a very wise saying, that "a little knowledge is a dangerous thing," and when applied to the eye the truthfulness of this saying

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impresses itself very forcibly upon me. However, there is no doctor, no matter how far back in the country he is, or how near the "head of the creek" he may practice, who should not be in a position to care for simple eye injuries in the proper manner. He certainly has a little cocaine solution for anesthetic purposes, without which, I will say in passing, it is impossible to do anything with an eye on account of the involuntary muscle action, and certainly he has a spud or some small, sharp-pointed instrument in his pocket case which he can sterilize and use in dislodging the foreign body. He may be handicapped to some extent on account of poor light, but this may be obviated by the use of a small pocket lens like the one I hold in my hand, or a small magnifying glass. The light from the ordinary candle or lamp may be brought to focus on the cornea, thereby aiding in the operation. When the removal of the foreign body has been accomplished the next step is the cleansing and antiseptizing the wound. For this I prefer a solution of tincture of iodine and alcohol, equal parts, gently applied to the wound with cotton applicator squeezed dry to prevent the solution from running over the surrounding surface. Sometimes it is unnecessary to apply a dressing to those simple foreign body cases where the patient is close at hand and can consult you at once in case there is further trouble, but as a general rule, they should have a dressing for a few hours at least, and be instructed to return for other treatment if it does not clear up in a few hours. Simple abrasions of the cornea should be treated by cleansing the eye and applying a bandage for a few hours. Hot compresses seem to lessen the pain and inflammation, and hasten the process of repair. I speak of the simple injuries first because these are the ones we see more often, and are the ones that cause the most trouble through neglect in the beginning.

Of the more serious eye injuries I think the ones we are most frequently called on

to treat are the perforating wounds of the cornea; either from foreign bodies, which pass into the deeper structure, or from some cutting instrument or object. We are pleased to class these among the most serious injuries because of the likelihood of grave complications which are prone to arise in these cases. A perforation of the cornea usually is following by an outpouring of the aqueous humor and prolapsing iris into the wound, and, if not attended to promptly, adheres and is very difficult to deal with, to say nothing of the impairment of vision which always follows.

Everything considered, I believe atropine is the most valuable agent we have in this character of injury if used at once. Its mydriatic action usually pulls the iris out of the way, and prevents its becoming incarcerated in the wound. After this is accomplished the wound is treated antiseptically and the eye put at rest. It is sometimes necessary, in spite of the use of atropine, to excise the protruding portion of the iris.

If, as is quite often the case, the perforation extends through the iris or the pupil into the lens, we have not only the cornea and iris, but a traumatic cataract to deal with, which means a cataract operation if the eye is ever of any further use as a seeing organ. Whether to needle the lens and wait for absorption or remove it by opening the anterior chamber, doing an iridectomy and pressing or washing it out, will be determined by the operator in each given case.

Most all these cases fall into the hands of an eye specialist sooner or later, and he can very quickly tell if the patient has had the benefit of proper first aid measures. Of course, you quite well know that all these injuries are accompanied by intense pain and much inflammation, and the patient is sure to call on you in no uncertain tones to alleviate his suffering. It may be necessary to give an opiate in some cases, as in any other injury, and the application of heat or cold in the form of hot or cold compresses is

very satisfying to the patient. It is my custom to give four to six cc. of boiled milk, intra-muscularly, in these cases. It aids in preventing infection and in the relief of pain. Boiled milk has proven a great adjunct in the treatment of eye diseases.

It goes without saying that the hospital is the best place for these cases. There they can have the benefit of the x-ray and magnet if it is a foreign body case, aside from being under close observation all the time.

It is well to bear in mind that any eye with a foreign body in its interior is a very sick eye, regardless of what the object is, how small, or whether or not it can be removed. Very often, if the object is small, and has not injured the ciliary bodies, and can be magnetized, it can be removed without much trouble following, but my observation has been that most of those eyes have to be enucleated sooner or later if the foreign body has lodged in the posterior chamber, on account of uveitis, panophthalmitis, or sympathetic ophthalmia. Foreign bodies in the anterior chamber can usually be removed through an opening in the cornea.

Very often we are called upon to treat burns of the eye, either conjunctival, corneal, or both, and the results usually depend, as in the other cases referred to, on the first aid the patient receives. These burns are usually caused by molten metals, acids, lime, steam, etc., and are always to be considered serious and a guarded prognosis given. Should the burn be from an acid the eye should be irrigated as quickly as possible with an alkaline solution and atropine instilled to prevent, if possible, a secondary iritis, which is prone to develop. If the burn is from the lime the first thought should be the thorough removal of the lime by forcible irrigation with clean water or olive oil, followed by atropine for the reason stated above. Contusions of the eye are very often seen, and may be simple or very serious, depending upon the amount of external force applied.

There may be a slight subconjunctival hemorrhage and ecchymosis of the lids, which will clear up in a few days without treatment, and again the sclera may be ruptured, iris detached, detachment of retina, interocular hemorrhage, etc., either one of which is very serious and demands the very best of care if the eye is to be saved.

There are a number of other injuries I might mention, but I will conclude by again calling to your attention the importance of considering all these cases serious ones and treating them accordingly.

DISCUSSION.

DR. E. B. CAYCE.—I think the essayist has given us a very valuable practical paper. I realize that it is often difficult to differentiate a very minor eye injury from one that may endanger the loss of an eye, and it would be working a hardship on a patient to suggest that all eye injuries are sent to a man especially trained in that line.

The removal of foreign bodies from the cornea are listed in all eye hospitals under the head of operations. In other words, they insist on the same methods of preparation for asepsis for the removal of the foreign body that is used in preparation for any eye operation. They have a rule at the Royal London Ophthalmic Hospital that every foreign body removed from the eye is followed by the instillation of atropine and a pressure bandage worn for twelve hours.

Of course, in private practice where a case can be kept under observation, a fixed rule like that is not necessary, but that order was made because of a certain percentage of foreign body cases that were followed by a corneal ulcer. As the essayist has stated, every perforating wound is a very serious matter, and, fortunately, the percentage of eyes that are not permanently damaged is small.

My observation has been that foreign bodies attached to the lid are very much more painful soon after their entrance than those in the cornea. Often a foreign body attached to the cornea may be carried for hours or even days before creating very much disturbance.

I think the important thing in removing the small imbedded foreign bodies is to make every effort possible to remove as little of the corneal epithelium as possible. Cocaine swells and softens the corneal epithelium, so we are now using the new anesthetic, butyn, which does not swell the corneal epithelium or act as a mydriatic.

My opinion is that the milk injection mentioned by the essayist is of great value in combatting any intra-ocular inflammation and is very much less painful than the subconjunctival injection of cyanide of mercury that was formerly used.

As a caution, I would suggest that the use of atropine might incite an attack of glaucoma if used in the aged, and those cases should be kept under close observation until the pupil is normal in size.

THE CRIPPLED HAND IN CHILDHOOD*

JOHN C. BURCH, M.D., Nashville, Tenn.

THE crippled hand in childhood differs radically from that of adults. In children the tissues are more pliable and have a greater power of regeneration. The economic problem is not so great, as they have no time to lose from work. On the other hand they are much less cooperative. The small arm and hand adds difficulties to the problem of splinting.

The success of the treatment depends on careful observation of the progress of the case and careful attention to the smallest details of the splinting.

Its essential features are:

(1) The mechanical correction of the deformity.

(2) Retention of the corrected position.

(3) The development of muscular power.

This paper deals primarily with the correction of the deformity with the posterior hinged traction splint, and all operative procedures have been omitted from the discussion.

The deformity is almost invariably of the flexion type, with the fingers flexed when the wrist is dorsiflexed. It may be of the more extreme type in which extension of the wrist is not possible. The deformities most commonly met with are cicatricial contractions, Volkman's paralysis and those resulting from nerve injuries. In cases of cicatricial contracture, burns have been found to be the most common etiological factor. These cases have generally required operation as an essential step. It is desirable to hold the hand in the over-corrected position of hyperextension at the wrist with extension of the fingers.

Motion at the wrist is desirable but is not

essential on account of the relative short period required for healing. The splint to be described later has worked admirably in this class of cases. Traction serves the purpose of keeping the fingers absolutely straight.

In Volkman's ischemic paralysis the hand is generally movable at the wrist. The fingers can be extended when the hand is flexed, but are pulled into flexion as the wrist is extended. The affected hand is generally colder and the skin is shiny and atrophic. Sensation is not as acute as in the sound member.

The over-correction is accomplished by the posterior hinged traction splint. It is simple of construction, easy of application and accomplishes over-correction while allowing free play at the wrist. The motion at the wrist prevents further atrophy of the injured tissues, and is of aid in establishing the impaired circulation. It is constructed of plaster moulded on the posterior surface of the forearm from the wrist to the elbow.

A four-inch strap hinge is incorporated in the distal end and a wire upright in the proximal. It is advisable to bind the wire and the hinge together as this makes a reinforcing frame throughout the plaster.

On the free end of the hinge is attached the wire traction hoop. The hand piece is made of basswood and is strapped on to the hinge and traction hoop. A splint made in this way is very strong and can be used indefinitely.

Traction is obtained by anterior and posterior straps of adhesive on the fingers. The bandage is well padded throughout and is applied to the forearm. It is especially well padded at the wrist. The bandage needs to be more snug in the upper part of the forearm than in the lower.

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The hand piece is placed at a point where the fingers can just be extended. It is fixed in this position by a retention bandage from the wire upright to the traction hoop.

Rubber bands are used for traction and these are attached to the hoop and then to the fingers by means of tape. The thumb is pulled diagonally across the palm and points to the tip of the little finger. The retention bandage is replaced by rubber bands and these are tightened as the necessities of the case demand. They are always kept loose enough to allow the wrist to have free motion.

Recently a metal splint embodying the principle of the post hinged traction splint has been devised for that class of cases where the thumb is one of the main problems. This splint has a metal outrider which allows the thumb to be maintained



in the desired position. It is connected to the frame by a joint and its length is regulated by one part screwing into the other. The metal splint has not proven as satisfactory as the plaster and is very expensive.

With the plaster splint the amount of traction on the fingers can be somewhat regulated by simply bending the traction hoop backwards or forwards.

Active motion at the wrist is insisted upon if possible and the patient is encouraged to increase its range.

In cases where there is insufficient muscular power for active motion, passive motion is obtained by pushing the hand into flexion and it is then extended by the rub-

ber bands. The splint is removed every four or five days for inspection of the hand and for readjustment. The region of the wrist is the site of the greatest pressure and should be carefully watched for pressure sores. None have ever developed but undoubtedly would have done so without constant watchfulness.

After over-correction is secured the splint is left in place for eight or ten days. The traction is gradually increased backwards as the muscular power returns and as the deformity is over-corrected. It should be remembered that the greatest amount of finger traction is when the hand is in hyperextension. This diminishes as the hand goes into flexion and makes motion unopposed except for the backward traction. This is because the arcs of the



descending hand and splint tend to converge as they descend. Anterior splints of the same character are not practicable for the reason that the arcs of the splint and hand tend to diverge as the hand is flexed, thus opposing the motion at the wrist to such an extent that the arrangement is greatly handicapped. Anterior splints are excellent for stretching the fingers on account of this reason.

Motion at the wrist is the key to success and is not to be sacrificed for any other consideration.

When the splint is removed the hand will rapidly return to its former condition

unless carefully watched. Motion with the consequent development of the muscles is the best retention splint. When the hand is not in use it should be in a simple gloved retention splint as shown in the illustration. One can easily be made from wood and adhesive plaster. Motion is encouraged and the parents are warned of the danger of recurrence. If this is properly emphasized to the parents and child they will generally be found to be most cooperative. The general treatment as outlined above is applicable to nerve injuries following suture or where there is evidence of regeneration. The posterior splint is especially adapted to this type of case as it furnishes a retention splint which is capable of allowing passive motion.

One case of Volkman's ischemic paralysis of two years' duration and with marked deformity was treated in the splint. The result was almost complete return to function of a hitherto worthless hand. Extension of the fingers with the wrist hyperextended is not complete, but is about fifteen degrees flexion. The case has been followed in the return clinic for a short time and has continued to improve at home.

One case of a recent Volkman's following a supra-condylar fracture was treated. The hand was cold and unable to be moved at the outset. When discharged four months later it was markedly improved. There was a fair grip. Complete extension of the fingers with the hand in hyperextension could be obtained with some ulnar deviation. On correcting the ulnar deviation there was mild crabbing of the fingers. This has improved following discharge.

One case of injury to the ulnar and median nerve with contraction of the fingers was treated with traction and anterior cock up splint. The deformity was corrected and regeneration took place. She is now able to write with the affected hand for the first time in a year.

One case of contraction of the fingers and limitation of extension at the wrist due to cicatricial contraction of inflammatory

exudate around the flexor tendons was treated and the motion became normal. This child has not been seen since discharge.

The posterior splint has also been used after operations on the hand for cicatricial contraction in two cases with satisfactory results.

DISCUSSION.

DR. A. G. NICHOL, Nashville: Ischemic paralysis has given us all a lot of trouble, and this type of splint seems to have relieved many of the troubles. Of course it has to be applied and kept on for a long time, but it is very helpful. I heard Dixon, of Kansas City, say that we are very likely to consider fractures merely as broken bones, when there are so many other conditions to consider, the trauma and hemorrhage, and in many instances of Volkman's contraction. He has been able to trace this out and has found hemorrhage in a nerve sheath, or imprisonment of a nerve; he has gone in and cleared that up. That is a small thing, but may be responsible for some of the trouble we have after fracture. He said that in many instances the bandage did not have anything to do with the contracture, because it was very loose.

I think this splint in many instances is all that we can ask for, and it certainly is of great assistance.

DR. JAMES S. SPEED, Memphis: I think it is a great mistake to use Briseiment force or forcible attempts at correction on these hands, as the reaction following it is quite severe and little is gained, also irreparable damage to the joint surfaces may be done. This prevents the opportunity of improvement by means of physiotherapy.

Physiotherapy of various kinds in combination with special splints which exert gradual traction is by far the best method of treating these deformities. The type of splint advised by Dr. Burch is most ingenious and useful for flexion of fingers where they are not ankylosed. We have found the most difficult place to get flexion is in the metacarpophalangeal joints. This should be the first point of attack, as function of the hand cannot be restored until this deformity is corrected.

In severe cases of Volkman's contracture there is so much destruction of muscle tissue in the arm that very little can be accomplished. The hand can be put in better position, but little better function is usually obtained.

DR. JOHN C. BURCH, Nashville (closing): I want to show these two slides again, if you do not mind, for there has been some misunderstanding about how the splint is to be applied. (Presented lantern slides.)

I am glad Dr. Nichol brought out the point about the tight bandage not being responsible for many of these contractions. The last case I treated was put up in adhesive plaster just around here (indicating), but that child developed Volkman's contracture, evidently from the amount of swelling around the elbow.

About the continuous traction; if we refer to the pathology of the disease we remember that if we force this and break up the fibrous tissue there will be a breaking up, with the formation

of more fibrous tissue. I think it is very important to keep these hands moving right away. I usually start this splint out with the hand up like this (indicating), for if it is down low you get more contracture. We start out like this, and then by tightening the splint we get the fingers straightened out. This is a dorsal splint with finger contraction, but the force is directed toward the tip of the middle finger (indicating slide). This one gives a good view of the finger contraction.

TRAUMATIC SYNOVITIS OF THE KNEE*

DR. HENRY COX, M.D., Nashville, Tenn.

TO BOTH the physician and the patient the appearance of fluid in the joint, after injury, is the most striking phenomenon. The joint adapts itself to the position where there is the least pain from tension and consequently in which its fluid capacity is greatest. If the injury is by direct violence the fluid in the joint is practically pure blood; a hemarthrosis rather than a hydrarthrosis. Even after several days the fluid shows traces of blood, both by its color and microscopically. Also the "sprain" of internal violence is associated with more or less bleeding. It is, no doubt because the blood absorbs very slowly that knee sprains take so long to recover under the older plan of treatment (immobilization, massage, etc.)

Normally, the interior of the knee joint is covered by the synovial membrane, except on the weight-bearing surfaces of the cartilage. Very little is known about the structure of the synovial membrane. It differs markedly in structure in different situations in the same articulation. It consists of a single layer of edothelial-like cells beneath which there is a layer of loose connective tissue, rich in capillaries, nerves and lymphatics. In certain spots the loose connective tissue layer abuts practically on the joint cavity. The articular cartilage of the knee joint presents the largest surface of this kind that we have in the body. These surfaces in health are smooth and are lubricated by synovial fluid, so that the complicated movement of flexion and extension is accomplished in a smooth, gliding manner. With the slightest variation of the smoothness of these articular cartilages the knee begins to rub and grate. The mechanics of the knee joint are not ad-

mirably designed for its purpose. It seems that the joint was constructed for the four-footed position, and not for one in which the end of the femur bears directly in vertical manner upon the end of the tibia. Perhaps in consequence of this functional variation from the original architectural design, we are subject to the various clinical phenomena which an overstrained knee joint produces.

In the acutely traumatized joint the synovial membrane is red, swollen and succulent. Small fibrin shreds are adherent to the membrane and the capsule is stretched and relaxed. Jaffe, working with joints into which whole blood had been injected, showed that the synovial membrane became markedly edematous as a result of the permeation of blood. However, the effusion may escape through a capsular rent and be absorbed by the surrounding tissues. Lacerations of the synovial membrane are in themselves not very extensive unless the knee joint has been punctured by a foreign body or ruptured by a fracture into the joint. The membrane heals readily, in the absence of infection, without very much contraction or scar tissue formation and consequently very little limitation of motion in the joint. If it be accepted that the mere presence of blood in joints predisposes to stiffness, the development of joint adhesions and the precipitation of fibrin masses, the urgent necessity of early evacuation of fluid becomes apparent. The possibility of a fissure may be revealed before beginning treatment by a careful x-ray examination, giving in clear detail both antero-posterior and lateral views.

The distention of the capsule may be prevented by evacuation of the bloody fluid the development of usual complications. As promptly and repeatedly which minimizes

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piration of a distended knee joint is not a serious affair. In fact, it is simpler and safer than aspiration of the pleural cavity. Infection or even serious reaction following joint aspiration is avoided by the usual sterile technique. The only precaution worth especial mention is that each aspiration should be through a fresh site on the iodinated skin. Metcalfe treated more than three hundred cases without infection. A recently injured joint should be emptied as completely as possible of its effused bloody serum, and a compression dressing applied for forty-eight hours, allowing for only a slight range of motion. If there is a reaccumulation of fluid after forty-eight hours, the joint is again aspirated and compression reapplied, allowing a free range of motion. During this time the patient is kept in bed or allowed to walk on crutches without bearing weight on the injured side. After a few days, if there is no reaccumulation of fluid in the joint, the patient is allowed to bear weight on the knee, gradually at first, to test the tendency to fresh bleeding. Walking may be increased after a short time if there is no return of swelling. Moorhead allows his patients to walk immediately after aspiration, as part of the therapy, but Brickner is more conservative and advises rest with partial immobilization in the early treatment. If weight bearing causes increased effusion in the joint, we believe it should be at once discontinued for a short period and fluid withdrawn with the needle. The knee lends itself well to aspiration. On either side of the patella the puncture can be made equally easy without an anaesthetic. However, it is difficult to completely empty the joint.

The safety and advantages of aspiration in traumatic synovitis have been warmly advocated by Moorhead, Willms, Metcalfe, Brickner and others. Yet textbook teachings of prolonged immobilization, massage and baking are still current in practice. Many patients treated in the usual way are subject to recurrences of synovitis as well as inflammatory hyperplasia of the liga-

ments and chronic arthritis. Careful inquiry should always be made as to the existence of any tendency toward hemophilia and the coagulation time of the blood determined. Whether aspiration treatment will absolutely prevent the development of these late sequelae or not, cannot be stated at this time, but the treatment is rational and meets certain definite indications. The distention and consequent laxity of the capsule is prevented by evacuating the bloody fluid promptly and repeatedly, and thus possibly later sequelae is avoided.

CONCLUSIONS

1. Synovitis of the knee may be caused by either external or internal violence.
2. The stability of the joint is impaired as the capsule is stretched by the hemorrhagic effusion.
3. Aspiration invariably shows hemarthrosis early and hydrarthrosis after a period of seven to ten days.
4. Prompt aspirations (a) relieve pain; (b) prevent atrophy of muscles by permitting early mobilization; (c) prevent tendency to weakness of the joint by allowing the distended capsule to contract, and (d) reduce the period of disability from many weeks to a few days.

DISCUSSION.

DR. HENRY G. HILL, Memphis: The subject of traumatic synovitis has been covered very thoroughly, and I am particularly interested in the condition. It has been said that about five per cent only of knee-joint injuries are accurately diagnosed. That is an alarming statement, but it is made by some men who are looked upon as authorities. If this is the case—and it may be—then certainly traumatic injuries of the knee should receive more consideration than has been given them in the past. In all probability a diagnosis of sprained knee will be made less frequently.

Fluid in the knee joint should always be considered a serious matter until proven otherwise. As the essayist has said, a knee joint that is markedly distended with fluid should be aspirated to prevent stretching of the capsule, with resulting instability of the joint and other complications which might arise. In a great many conditions we find fluid in the knee joint following trauma; violence may be direct or indirect. After careful study of a case, one usually concludes that the

patient has sustained a rupture or dislocation of semilunar cartilage, laceration of some of the ligaments, a small fragment of cartilage has been detached from the articular surface of the bones or the capsule has been injured. Again after strenuous or prolonged exertion an individual who has some static deformity, such as flat foot, knock knee, etc., might develop an acute synovitis, due to improper distribution of weight bearing in the knee joint.

Dr. Cox has covered the treatment of acute synovitis very well. I should like to accentuate a few important points which he brought out. If there is a considerable amount of fluid present in a knee joint, it should be aspirated. Certain writers believe that blood clots within the joint are responsible for development of loose bodies. Others, however, explain them on a basis of inflammation and infection. An accumulation of free blood within a traumatized joint offers an ideal media for infection. I am inclined to regard synovitis as a sign of some underlying condition. The common expression among the laity that a "bad sprain of the knee is worse than a broken bone" arises from the fact that the diagnosis of sprain frequently covers too many injuries, especially so when the knee is involved.

DR. WILLIS C. CAMPBELL, Memphis: Dr. Cox has given to us an excellent description of the treatment of acute traumatic synovitis, but unfortunately a differentiation cannot be made between simple synovitis and when complicated by small fractures, displaced semilunar cartilages and impingement to other important structures. In those of mild degree no treatment may be necessary other than rest. In the same cases immobilization by plaster cast or simple splints for three weeks will give satisfactory results; and if there is excess of fluid with increased joint fusion, repeated aspirations may be necessary. Rest and aspiration will often avoid late complications, as internal derangement. Massage is an excellent adjunct, but by no means essential. Early active motion is undoubtedly of value in certain

joint affections, but is at present being overcome. In simple splints conservative measures can be effectively applied by any physician without the aid of an expert.

In some instances there is a definite history of trauma without symptoms for several weeks; which is due to the fact that there are no nerves or blood vessels in cartilages, but after a break in continuity, there is an invasion by nerves and vessels with symptoms of pain and swelling.

The prognosis of joint injuries should always be guarded, as remote disturbances from displacement of cartilages, breaking off of cartilage or bone, so called osteochondritis dissecans, and other derangements, may arise. However, if a conservative course is pursued early, these late manipulations are usually avoided.

DR. HENRY COX, (Nashville (closing)): I wish to thank the doctors for their discussion. Dr. Hill said there was a very small number in which a correct diagnosis was made. Therefore, I wish to stress that an x-ray examination of the knee joint be made, and that two views be taken of each knee. Sometimes a peculiarity exists in the knee and a view of both knees, both antero-posterior and lateral views give a good idea of the extent of the pathology. If there is much distension of the joint I think early evacuation of the fluid is by far the best treatment. As Dr. Campbell said, we should institute rest at first and give the patient a chance to recover, instead of the plan of treatment advocated by Moorehead and others of having the patients walk immediately. If the patient is allowed to go about his usual duties, it undoubtedly will increase the pathological condition and do much harm. Therefore, I wish to stress that rest should be given for a period following evacuation of the joint. When the patient begins to use his knee this should be done very gradually, so if the effusion increases after active exercise he can be taken off his feet or put on crutches, and the knee can be watched very carefully so that no further effusion shall develop.

THE JOURNAL

OF THE

TENNESSEE STATE MEDICAL ASSOCIATION

Devoted to the Interests of the Medical Profession of Tennessee

Office of Publication, 420 Jackson Bldg., Nashville, Tenn.

J. F. GALLAGHER, M.D. -----Editor

R. C. DERIVAUX, M.D. -----Associate Editor

OCTOBER, 1925

EDITORIAL

A BAD PRECEDENT

On Tuesday, Aug. 18, the Knox County Medical Society passed a resolution offering to vaccinate persons against typhoid fever, provided the city health bureau would furnish the vaccine. The Knoxville Daily News of August 25, carried the following in its news columns: "Dear Will: It was mighty generous of the doctors of Knoxville to offer to administer typhoid vaccine to the public free of charge. It shows a splendid, unselfish public spirit." (Signed) "General Knox."

The record does not indicate the identity of General Knox but it would be reasonably safe to hazard the guess that he is connected with some public health service—city, county, state or national. From the point of view of an officer of some such service, the action taken by the Knox County Medical Society is certainly "generous," "splendid" and "unselfish," but the question may be pertinently asked whether the Knox County profession was doing itself justice. It is not exactly clear why the medical profession should be called upon to renounce the collection of a reasonable fee for rendering a valuable service to the people of a community. Has it come to pass that preventive medicine shall be given to the community free of charge and that the medical profession obtain its legitimate revenue only from the treatment of disease? It is reported that the average charge in Knoxville for the administration of typhoid vaccine is six dollars. Many individuals get

very much less for six dollars than they get when they receive immunization against typhoid fever. There is nothing to show that any dire emergency existed in the typhoid situation in Knoxville at the time. The local city health bureau was amply able to cope with the situation. The bureau was no doubt ready and willing to give the vaccine to any and every one who might apply, though it is debatable whether any public health service should render any medical aid, either in the prevention or treatment of disease, where the individual is able to pay a physician a reasonable fee. The medical profession has never failed to render every assistance possible to any individual free of charge when that individual was unable to pay for the services, cost what the service may.

This is written in no spirit of criticism of the Knox County Medical Society. They have possibly sound reasons for the action they took and which are not in the possession of the writer. Their action, however, is a case in point to remind the profession that they have certain honorable, ethical rights which they should not thoughtlessly toss aside.

DEATHS

Dr. C. W. Womack, of Lewisburg, aged 86, died October 2nd. Dr. Womack was a graduate of the Kentucky School of Medicine, Louisville, in the class of 1870 and was a member of the Marshall County Medical Society.

Dr. Andrew J. Campbell, of Elizabethtown, aged 69, died October 5th. Dr. Campbell was a graduate of the University of Tennessee College of Medicine, Memphis, in the class of 1892.

Dr. W. D. Horne, aged 73, retired physician of Brunswick, died October 7th. Dr. Horne was a graduate of Vanderbilt University.

Dr. L. L. Webb, of Carroll, aged 70, died October 17th. Dr. Webb was a graduate of the University of Louisville School of Medicine in the class of 1880.

Dr. D. V. Huff, of Christians, aged 79, died October 17th. Dr. Huff was a graduate of Vanderbilt University, School of Medicine, in the class of 1877 and was a member of the Rutherford County Medical Society at the time of his death.

Dr. W. Frank Glenn died at his home in Nashville October 20th, after a brief illness of only a few days. Dr. Glenn was born in Sumner County on October 28th, 1853. He studied medicine under Dr. W. R. Tompkins of Gallatin and later entered the Medical Department of the University of Nashville from which institution he graduated in 1873 and began the practice of medicine in Nashville. In the late seventies Dr. Glenn, in association with Dr. Paul F. Eve and Dr. Duncan Eve, Sr., organized the Tennessee Medical College in Nashville which later became the Medical Department of the University of Tennessee. In 1883 Dr. Glenn was elected president of the Tennessee State Medical Association.

Of unusual intellectual attainments and attractive personality, Dr. Glenn enjoyed an unusually large practice in his chosen specialty, genito-urinary diseases. Although in poor health for several years past Dr. Glenn continued practice of his profession up to the time of his death.

In the passing of Dr. Glenn the profession has lost a scholar and a gentleman.

NEWS NOTES AND COMMENT

Dr. A. B. DeLoach of Memphis has been reappointed a member of the State Board of Medical Examiners.

Dr. M. B. Hendrix, of Memphis, was elected president of the Frisco Railroad Medical Association at its meeting in St. Louis September 28th.

Contract has been let for a five story brick and stone structure in Memphis to be known as the Eye, Ear, Nose and Throat Infirmary. The building will cost one hundred thousand dollars. Dr. Louis Levy is president of the organization.

Recently Dr. W. S. Nash of Knoxville appeared before the City Council and made them a proposition to run the Knoxville General Hospital for fifty thousand dollars less per year than it is now costing the city. It would seem that Nash is just naturally out looking for trouble.

The Medical Department of the University of Tennessee opened September 28th with a record matriculation of two hundred and thirty-six. They are divided as follows: Eighty-two freshmen; fifty-four sophomores; fifty-one juniors, and forty-nine seniors.

The new nurses home in connection with the Memphis General Hospital will be known as the Doctor Marcus Haase Nurses' Home and Training School. This action was taken by the City Commission of Memphis in memory of Dr. Haase who gave so much of his time to the upbuilding of the Hospital and Training School.

At the recent meeting of the Walnut Log Medical Society at Reelfoot Lake, Dr. Ira Park of Union City was elected president; Dr. Willis Moss of Clinton, Kentucky, was elected first vice-president; Dr. R. M. Little, of Martin, Tennessee, was elected second vice-president; Dr. J. D. Brewer, Dyersburg, Tennessee, was elected treasurer and Dr. R. Lyle Motley, also of Dyersburg, was re-elected secretary.

AN EPITOME OF THE TRANSACTIONS OF THE TENNESSEE STATE MEDICAL SOCIETY*

By J. D. PLUNKETT, M.D., Nashville.

All the books of record, and archives of the State Medical Society, were lost or destroyed during the war, indeed, all official publications of the Society prior to that time seem almost to have wholly disappeared, if one is to judge by the fruitlessness of my efforts in the hunt for such during the sixteen years in which I was an officer of the Society. Once only did I succeed in obtaining anything antedating 1866, and that was a copy of the transactions of 1853, which was left at my office in the spring of 1866, without name of donor, or a word of explanation. It is a valuable document, both from the high order of essays and discussions it contains, as well as its rarity. It is a pamphlet, full octavo in size, of 80 pages, with tag board sides and cloth back, closely printed in long primer type upon pure rag paper, and hand stitched. It resembles closely the general typographical appearance of the transactions of 1888. The title page has this upon it: "Transactions of the Tennessee State Medical Society, at its Twenty-fourth Annual Session, Convened at Nashville, May 4th, 1853. Nashville: Printed and Published for the Society by J. F. Morgan, No. 50 Cherry street, 1853." The Society met in the Medical College upon Wednesday, May 4th, 1853, and continued for three days, holding a morning and afternoon session each day, and upon Thursday an evening session.

The following members registered as present: Drs. Felix Robertson, A. H. Buchanan, John P. Ford, Wm. P. Jones, R. M. Porter, W. H. Morgan, R. O. Currey, Robert Martin, W. K. Bowling, J. M. Watson, J. W. King, of Nashville; Thomas Lipscomb, Shelbyville; J. L. Park, Frank-

lin; R. S. Wendel, B. W. Avent, Murfreesboro; M. Ransom, Rutherford county; E. D. Wheeler, McKnight; J. J. Abernathy, Murfreesboro; E. B. Haskins, Clarksville, and — Wilson. The following were elected members of this meeting: Drs. W. T. Briggs, T. L. Maddin, J. D. Winston, R. C. Foster, P. S. Woodward, Wm. McCombs, J. W. Gray, F. G. McGavock, B. Wood and E. C. Robb, of Nashville; J. M. Larkin, Charlotte; J. H. Morgan, Wm. McNelly, Bedford county; J. C. Patterson, Davidson county; R. F. Evans, Shelbyville and H. M. Whitaker, of Montgomery county.

The retiring President, Dr. John M. Watson, read the annual address, taking as his subject "Retrospective, Perspective and Prospective Views of Medicine," closing with the words "more attention will in all probability hereafter be given to the means of preventing than of curing disease," a prediction which each succeeding year has with increasing ratio only tended to fulfill in a striking degree.

The Society, upon motion, convened in the afternoon at the City Hall, where the remainder of its sessions were held, and, upon the recommendation of a nominating committee composed of Drs. Lipscomb, Avent, Buchanan, Ford and Martin the following were elected officers for the next two years, viz:

Dr. Felix Robertson, of Nashville, President.

Dr. E. B. Haskins, of Clarksville, Vice-President.

Dr. John W. King, of Nashville, Recording Secretary.

Dr. Robert C. Foster, of Nashville, Corresponding Secretary.

Dr. William P. Jones, of Nashville, Treasurer.

*From the transactions of the fifty-sixth annual session, held in Nashville, April 30, May 1 and 2, 1889.

Retiring Treasurer, J. J. Abernathy, reported receipts since 1851 -----\$115.00 and expenditures, including printing proceedings of the Society for 1851 ----- 77.15

Leaving balance in the treasury

May 3, 1853, of ----- \$37.85

Dr. W. P. Jones, chairman of committee on the "History of Continued Fevers of Tennessee," submitted report showing progress made by committee and asked for further time.

Dr. Richard O. Currey, chairman of committee on "Adulteration of Drugs, Medicines, Chemicals, etc.," made an able and very carefully prepared report which covers thirty-nine printed pages.

Dr. Park reported a case of operation for "Fistula in Ano," and exhibited a set of instruments of his own invention for the performance of the operation.

Dr. Ransom reported "an interesting case of paralysis, marked by several remarkable phenomena."

Dr. Smith Bowlin, of Bedford county, through Dr. Watson, reported a case of "fallopian pregnancy," and Drs. R. Martin, Avent and others related several cases of similar character." Dr. R. Martin was appointed chairman of committee to collect and arrange all the statistical information bearing on the subject of extra-uterine pregnancy, to be presented to the next meeting of the Society.

Dr. Knight, of Rutherford county, reported a case of "gun-shot injury of the leg, resulting in a chronic tumor, complicated with hemorrhage." The discussion before the Society of the different cases as they were reported by the several gentlemen was participated in generally by the members, and was of a high order and at times the the record states "it was quite animated."

Drs. Buchannan, Robert Martin and J. P. Ford were appointed a committee to revise the Constitution and By-Laws and report at next annual meeting.

Dr. E. B. Haskins, chairman of Committee on "History of Epidemic Diseases

in Tennessee," reported that twelve months before "letters were addressed to the postmasters of all the county seats in the State asking the names and addresses of two or three of the most distinguished physicians in their respective counties."

"A ready response was made to this letter and one physician in each county was selected to whom was sent a printed letter, asking his aid in furnishing the material of his county—with the emphatic request to return the letter if he declined the assistance sought." The report further states that "besides this special arrangement for the accumulation of material your committee published an Address to the Physicians of Tennessee in the Nashville Journal of Medicine and Surgery, and in the East Tennessee Record of Medicine and Surgery, begging every one in possession of facts useful to the committee to report to either member. Private letters, accompanied by the printed circular were also addressed to a few distinguished physicians, who are and have been editors of medical journals in the West, asking information with regard to any publication touching the subject matter of the committee's report, which may have appeared during their editorial career."

Two only of the letters sent to the physicians were returned as suggested, and after so extensive a preliminary effort, the committee report the number of communications received by them to be a grand total of only three—"one from Dr. W. D. Haggard of Gallatin; one from Dr. Thomas Lipscomb of Shelbyville, and one from Dr. Conn. of Pelham, Grundy County.

A repetition, it will be observed, of the old, old story, then as now, the lethargy and indifference of the profession in Tennessee to let itself be heard and felt, in that grand effort which is being made to lessen human misery, through the application of those general principles, which alone can be deduced from an intelligent analysis of a large number of individual observations carefully recorded, and in their completeness most necessarily embrace all latitudes, localities and circumstances.

(To be continued.)

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PELLAGRA*

W. T. DESAUTELLE, A.B., M.D., Knoxville.

DURING the past summer more patients than usual came to the Knoxville General Hospital suffering with pellagra. Our efforts in the treatment of these cases have been highly successful and the main portion of this paper will be given to discussing the methods employed. These were based on the theory that pellagra is a disease due to food deficiency, or more specifically, a lack of proper vitamins. The vitamins capable of preventing pellagra are present in considerable quantities in sweet milk, fresh meat, fresh eggs, wheat bran, corn bran and the germ of corn.

The value of diet in the prevention of pellagra, as worked out by Goldberger and his associates of the United States Public Health Service, is, I believe, the most important step made in determining the etiology of this disease. The basis of this work may be summed up in three points: "First, pellagra is essentially of dietary origin. Second, that it depends on some undetermined error in diet with a disproportionately small animal or leguminous protein component and a disproportionately high vegetable component. Third, that no pellagra develops in those who consume a

mixed, well balanced and varied diet."

In the course of his studies in a Southern orphanage he discovered that 75% of the children suffered from pellagra, but those children receiving a milk diet escaped the disease. Later, following the changes he suggested in diet, no cases of pellagra occurred in this same institution. This is not an isolated instance, for like results have been obtained with similar treatment in other places.

Goldberger then attempted to reproduce the disease in man by an erroneous diet chosen for its very deficiency. From the series of experiments conducted he succeeded in producing a diseased condition which was regarded as pellagra by him and other clinicians familiar with the disease. These conclusions, however, have been criticised because the skin lesions were found on the scrotum. It is well known that the parts of the skin surface exposed to light and air are most frequently affected, but Wood calls special attention to the atypical locations of these lesions. In his experience, by carefully examining the entire skin surface, scrotal lesions were found not uncommonly, and in females erythema frequently occurs about the vulva. Perianal lesions have also been observed. At the Lister Institute in London a monkey fed on a faulty, one-sided

*Read before the East Tennessee Medical Society, Cleveland, Tenn., October 22, 23, 1925.

diet developed erythema and other symptoms exactly like pellagra.

One could hardly believe that the production of pellagra results from a diet consisting largely, or even partially, of corn meal since people have developed pellagra who do not eat corn meal at all, but it was a corn meal experiment which suggested to Wood an investigation of the method by which maize is milled. This was the report from P. A. Nightingale in Rhodesia. "In a prison an acute disease appeared, unknown to the observer, but the diagrammatic sketches of the skin lesions and the account of the symptoms show very definitely a picture of pellagra.

At once Nightingale was convinced that the fault was of food origin. In former times, ropoka, a small variety of maize, was grown on the prison farm and was hand ground in toto by the prisoners. During all the period of this plan of feeding, no pellagra had been seen. When the ropoka crop failed, the prisoners were fed on "mealie meal," which was a form of meal made from maize, rendered deficient by the manner of commercial milling. As soon as the return to the original food was made, the result in the prison, from the standpoint of stamping out the disease, was, in the language of the observer, "immediate and magical." This experience of Nightingale induced Wood to investigate the commercial meal, commonly sold in the South, and it developed that in the modern steam mill, the corn is "degerminated." The germ of the maize is situated at the hilus of the kernel. It contains so much fat as to make the meal rancid in a very short time. Therefore, in order that cornmeal would have keeping qualities, the germ has been removed by the finer processes of milling. Wood studied the maize germ for its content of P2O₅, assuming that it is a reliable indicator of vitamins, and he determined that highly milled maize meal, without the germ, contained a very low percentage of P2O₅, and the maize germ itself contained a relatively high percentage. There remain now very few of the

old-time mills where the nearby living inhabitants take their corn to be ground weekly. In these old mills the entire kernel and hull was contained in the corn and produced. Instead, folks now use mostly the highly milled degerminated product.

In the communities of the South where pellagra is frequent, it is common practice for people to live on cereals cooked with baking powder or to use self-rising flours, which contain bicarbonate of soda and acid sodium phosphate, heating of which forms an end produce decidedly alkaline. Sodium bicarbonate is also used in cooking vegetables, or the vegetables are frequently cooked with a piece of white salt

pork. Voegtlin has shown that an alkaline medium destroys the protective substances of foods commonly called vitamins. Wood calls attention to the time relationship between the introduction of these perversions of diet and the appearance of pellagra. He notes that the grandparents of these people ate cornmeal and wheat flour ground at the local mill with no removals and it was cooked in the ashes without rising agent of any sort. They also ate smoked pork, where today the salt pork is eaten. These people never had pellagra, not even in the lean years, immediately following the Civil War, nor during the war when the country was in the hands of the enemy and extreme privation was suffered.

In the treatment of pellagra, the most valuable remedies in the order of their efficiency are: Corn germ, milk, fresh beef and other fresh meats not overcooked, fresh salad vegetables not overcooked and not cooked with fat meat of alkalies. Fresh fruit is also valuable. The patient should be urged to avoid chemical rising agents and highly milled grain.

Following the experiences of Wood, we used very liberally the germ of corn in the treatment of our pellagrins at the Knoxville General Hospital. Owing to the listlessness and general apathy of this type of patient, the most important point in the treatment is to induce the patient to con-

sume the food set before him. This will require on occasion much time and frequently infinite patience, but by actually forcing them to eat the diet we were rewarded with the most startling and spectacular results.

Mrs. D. K., age 36, married, white. Entered hospital after having suffered two months with marked erythema on the dorsal surfaces of both hands and forearms, exceedingly sore mouth, and a severe diarrhea, twenty to thirty bowel movements daily. She had been gradually growing weaker and on entrance to the hospital was unable to get about at all. She had involuntary bowel movements. Her mind was not at all clear and she resisted every effort which was made to make her comfortable. The patient suffered with insomnia and restlessness all night long. She had most severe and distressing rhinitis with a very profuse, yellow, purulent, foul smelling discharge, which flowed continually from the anterior and posterior nares. This condition caused her to be nauseated and to vomit to such an extent that she refused to eat anything at all. I urged the attending nose and throat physician, Dr. H. E. Christenberry, to make haste and clear up this discharge in order that I might, at least, feed her the corn germ, but he informed me that the condition was due to the pellagra and there were no local lesions accountable for it. This was a rather difficult situation, but three times a day a nurse carried in a large bowl of corn germ and fed it to the patient with a spoon, forcing her to consume the entire quantity. In two days the nausea and vomiting was relieved, the patient obtained a few hours sleep at night and an intelligent look appeared in her eyes. A few days later she was able to control her bowel movements, although the frequency was not diminished. From this time on her improvement was rapid and steady. Inside of a week, the discharge from the nose had almost entirely subsided.

The erythema was fast disappearing. She developed an appetite and the bowel movements were cut down to about seven a day. Her diet was greatly increased to include a large quantity of mixed food. Every five or six days, the patient gained from one to two pounds and was very soon sitting up and walking around in the hospital. The most obstinate feature in the treatment of this case was the diarrhoea, and when the patient left the hospital she still was having four or five bowel movements daily. She refused to remain longer because she felt so strong and well that we could not convince her of the necessity of it.

Mrs. E. C., white, female, age 42, married. Entered the hospital very emaciated and so weak she was confined to her bed. She had most extensive eruption on the backs of both hands, both forearms and six inches above the elbow. She also had a very wide band about her neck and extending down on her chest. There were patches on the dorsal surfaces of both feet, extending from the toes about halfway to the ankle. Most of the skin appeared to have been burned. It was cracked, and especially the backs of both hands showed many large crusts. Her mouth was sore and both lips were covered with sores. Patient whined about pains affecting her whole body. She had twenty to forty bowel movements daily; as

she said, "they were continuous." The patient complained that she had been troubled with sleeplessness for two months and begged for some medicine to give her rest. We at once gave this patient corn germ in large quantities three times a day, and offered her a well selected tray of food to eat. The food she refused, the corn hearts she was forced to eat from a spoon, administered by a nurse. Three days after this treatment had begun, patient said her bowels were worse, but the skin showed extensive improvement in general appearance. Five days later patient assured us that she had slept comfortably the previous night, had had but one bowel movement during that time and stated that she felt better. The eruptions everywhere began to peel, leaving a healthy pink skin beneath. No medicines of any kind were given this patient, not even a hypodermic of morphine to relieve the sleeplessness and the bulk of her diet consisted of corn hearts. From this time on to the present her improvement has been rapid and steady. She is still in the hospital. Eleven days after admission the patient sat up in a chair, presenting an intelligent, clear facial aspect, sore lips and sore mouth entirely gone, appetite improving daily; in fact, at this time she is consuming all the food on a well-filled tray.

Whenever I mention corn hearts in the treatment, this term is synonymous with the germ of corn. The fact that they are known locally among the milling companies as corn hearts has lead to this terminology.

The next two cases are both instances of the effects of this treatment on patients with marked mental disturbances.

Mrs. M. T., white, age 25, female, widow. She had suffered with a variety of symptoms for three months, which had lead to a diagnosis of hysteria. When she entered the hospital she was able to walk about. During the day the patient remained quietly in bed, but as soon as night came, up she jumped in her hospital gown to wander all over the ward, poke her head into everybody's room, talk foolishly and irrationally to the nurses in attendance and in every way make herself generally obnoxious. She persisted in remaining up all night long. This went on for about a week, when she developed a very intensive diarrhoea and for a week or ten days refused to eat food at all. During this time there was observed a gradually increasing, very dark brown discoloration with slight desquamation of the backs of the hands and the dorsal surfaces of both feet. Then she began to suffer with involuntary urine and stools and lay in bed all of the time in a listless and apathetic condition. When asked questions she replied very slowly or not at all. Sometimes her answers were intelligent and other times quite irrational. Every effort was made to get this patient to eat and all kinds of food were offered her. When attempts were made to force the food she would take it in her mouth and then let it run out down her chin. At last it was necessary to use the stomach tube and just about this time it dawned on us that the patient was suffering with pellagra and not hysteria. Then corn hearts were given, first with stomach tube and later with a spoon. All previous medication was discontinued. Two days after instituting the corn heart treatment she

became brighter, sat up in bed and took her food without any resistance whatsoever, although she was too weak to feed herself. The involuntary urine and bowel movements continued for six days, but on the fourth day her mental condition had improved sufficiently to cause her to be ashamed of soiling the bed, and she would get out of bed and attempt to use a chamber placed in the room for that purpose. Occasionally she missed it and the floor suffered, but by the end of six days she had perfect control over her urine and bowel movements. During all this time the patient had lost weight until she weighed but eighty-three pounds. After the third or fourth day of the corn heart treatment she became interested in the food, regularly consumed everything put before her, and gained one or two pounds in weight every five or six days. Twenty-two days after the beginning of this treatment the patient was walking about the hospital and acting like any other normal individual.

Mrs. V. W., white, age 48, female, married. Entered the hospital in a very irrational and excited state. She was very noisy during the day, refused to stay in bed and was continually urging the attendants to help her get across the river every time she succeeded (which she frequently did) in slipping out from beneath the restraining sheet to totter about the hospital almost naked. If anyone stopped to talk to her for a moment, they were entertained with a long religious lecture, rambling and incoherent. She had no control over her urine and bowel movements and had lost so much weight that she appeared a mere bag of skin and bones. The backs of her hands and forearms presented a very dark brown, thin atrophic condition. On a diet of corn hearts the patient showed improvement at the end of the third day. Her conversation became more intelligent, she consented to lie quietly in bed without a restraining sheet and ate her meals without putting up a fight, as had been her custom when she entered. The involuntary urine and bowel movements continued until the seventh day after the institution of the treatment. About this time the skin of her hands began to improve in color, the dark brown discoloration being replaced by healthy, pink skin, her eyes lost the dull, listless appearance, and she made every effort possible to assist the attendants to improve her condition. Fifteen days after her admission she was able to sit up in a wheel chair, and a few days later could go about the hospital like a normal individual. She entered the hospital weighing ninety pounds and left weighing one hundred pounds.

To report the other cases, with one exception, which have come under our observation since the institution of this type of treatment would merely be a repetition of the four cases which I have just related.

The one exception is a white man, 65 years old, who entered the hospital with diarrhoea and very marked mental disturbances such as those described above, but owing to the fact that a nurse was not instructed to take the food to him and insist or force him to eat it, this patient has enjoyed a most hilarious time in the hospital, so much so that it was necessary to confine him in a cell, and thus he rambled along for several weeks, suffering with his dementia and diarrhoea continually. He, however, was also receiving luminal very frequently in an effort to relieve the rest-

lessness and especially to quiet the noise he made at night, but with discouraging results. I have observed that luminal very often does quite the opposite of quieting pellagrins. When this was discontinued and the nurse was instructed to feed him the corn hearts with a spoon the patient began to mend both mentally and physically. The improvement was noted six days after the correction of these errors, but a day later he had a sudden relapse with the reappearance of all the previous symptoms and the added one of an insane desire to fight everybody in the ward. This required confinement in the cell again. The treatment was persisted in and four days later he was again apparently normal, and in a natural manner was inquiring about his family. His bowel movements are still very frequent. In spite of this fact he has gained three pounds in the last five days. He is still in the hospital under treatment.

Corn hearts are obtained in the form of a rather coarse meal. They are prepared by boiling only long enough to make them soft and are served with cream and sugar. This food tastes somewhat like grits and is very palatable.

In reviewing our experiences with pellagra in the Knoxville General Hospital in the past twelve months, I observed that there had been admitted during this time twenty-two cases. During the first six months pellagra patients had been treated variously with heavy proteid diets, milk, fresh vegetables, Fowler's Solution, cacodylate of soda and 606. Twelve cases received such treatment. Of these twelve, four were discharged improved, three were discharged unimproved and five died in the hospital. During the last six months, ten cases of pellagra have been admitted. All of these patients were treated with large quantities of corn hearts and liberal diets, special attention being given to corn hearts. Medicines played no part whatsoever. Of these ten cases, seven were discharged apparently cured, two were discharged greatly improved, and one, still in the hospital, I would say is unimproved. In comparing the two series the severity of the cases run about even, and, anyway, everyone knows that when a pellagrin comes to the hospital they are desperately ill; in fact, we rarely see ambulatory case of pellagra at the General Hospital. Personally, I am greatly impressed by the different results observed in these two series,

and attribute our later success to the use of corn hearts.

To sum up, I believe that the greatest hope for rational treatment of pellagrins is: first, to disregard medicines; second, to use large quantities of corn hearts; third, to insist on liberal diet of milk, fresh meat, eggs and vegetables, being sure that no baking soda or alkalies are used in their preparation; and lastly, to realize the necessity of efficient nurses or attendants, and this last is equally as important as the other measures. To order in a hospital or suggest in the home the use of these remedies is valueless, unless we appreciate the extreme apathy and listlessness of the suffering pellagrins, to combat which it is necessary to feed him with a spoon like a baby.

Maize germ is known about Knoxville as "corn hearts,"* in the Carolinas as "corn chops," and is sold by various milling companies as a good milk producer. As it becomes rancid on account of the high oil content, only small amounts should be purchased at a time, and these should be freshly milled when purchased.

Recently, Gldberger has obtained a high content of water soluble B vitamine from Brewer's yeast, which can be obtained from the Harris Laboratories, Tuckahoe, New York, under the trade name of "Tablets Yeast—Vitamine (Harris)". Wood suggests the use of both corn maize germ and the yeast tablets.

SUBSEQUENT REPORT.

Since having written this paper, the patient whom I reported as still being in the Knoxville General Hospital under care and in a condition as unimproved, has since regained his mental equilibrium and been discharged from the hospital cured.

Shortly after the presentation of this

*"Corn hearts" can be obtained in Knoxville from the Henderson Milling Company, 518 South Central Avenue.

paper Dr. K. A. Bryant, of Maryville, referred to the Knoxville General Hospital Mr. J. M., age 47, occupation laborer, who was evidently in the last stages of a protracted pellagra. On entrance to the hospital his bowels were moving several times daily and he had eruption on his face—red, swollen and many crusts. The hands and backs of the arms were scaling. Patient was very, very thin, emaciated and quite sick. His mental state was rather sluggish, but not irrational. The patient was put on the treatment prescribed above and for a few days became more comfortable, much brighter and apparently improving, but the bowel movements increased very markedly in number. A day or two later there was excruciating pain all over the abdomen, which was considerably distended and quite rigid, with marked tenderness on pressure in both iliac fossae. This lasted about forty-eight hours before it began to subside. After it subsided the mental condition of the patient became cloudy and for a few hours he was quite difficult to handle. Two days later he began having involuntary stools and urine, and feeding became excessively difficult. The following day there was no improvement whatsoever and the patient died. The onset of this attack had been several months previous to his admission to the hospital and there had been practically no subsidence of the symptoms during all this time. An autopsy was performed to ascertain the presence of any complicating conditions, but none could be found, except a very marked extensive congestion of the power portion of the jejunum and most of the ileum. The color of the intestine in these areas was almost purple and here and there small areas of the mucosa had sloughed off, leaving superficial ulcers varying from two millimeters to two centimeters in diameter.

This last case would bring our series to a record of ten cures and one death.

GUN SHOT AND STAB WOUNDS OF THE ABDOMEN, AN OBSERVATION OF TWENTY-EIGHT CASES AND THE IMMEDIATE END RESULTS*

MURRAY B. DAVIS, M.D., Nashville.

THIS subject has been exhaustively discussed, in the past, both from a civil and military standpoint; especially so the latter; so, in reviewing these twenty-eight cases of abdominal perforation which I have had the opportunity to observe, I do not do it with the hope of bringing forth any new ideas in treatments or plans of management, but with the desire that it may be of interest to go over some of the salient points of the diagnosis and the management of this type of injury.

I know of no type of case that demands the operative judgment or the accurate skill that this condition presents. Time is an extremely important factor; too early surgery is just as fatal, if not more so, than too late surgery—just as too much surgery is as fatal as too little. The question of time, that is to say, when to operate and when not to operate, is one phase of the question of abdominal perforations upon which I wish to lay particular emphasis.

In these cases we were imbued with the idea of immediate operation and as a broad working principle this idea is good, for we all recognize the fact that the mortality rate increases rapidly with the increase of time intervening between the time of injury and the time of operation. And, by the same token, active hemorrhage demands immediate interference.

We should first attempt to diagnose whether the symptoms which the patient is showing are due to shock or hemorrhage. For shock is a contra-indication to an immediate operation.

The *bleeding* patient is usually restless and has air-hunger—the *shocked* patient is

listless and lifeless.

Of the patients who died within twelve hours of their operation there were:

Three who died within one hour after operation.

Two who died within two hours after operation.

One who died within five hours after operation.

One who died within six hours after operation.

Two who died within ten hours after operation.

It is safe to assume that none of these patients died directly from their intestinal perforations. In the light of our present knowledge, we should first treat them for their shock, for the patient that cannot be rallied from his shock will not stand the additional shock of a laparotomy.

I was impressed in a number of cases by the small amount of bowel content that escaped from a perforation, even in some who had a perforation for two or three hours. This is explained by Nicholas Senn as being due to the contraction of the muscular coat for several inches above and below the point of injury. This prevents leakage until the muscles are exhausted and peristalsis forces the contents to the point of rupture. A very good argument, I think, for morphine in large doses between the time of injury and the time of operation.

In this series of cases there were eight stab or incised wounds of the abdomen with no deaths. Two of the wounds caused no intra-abdominal injury; one did not go into the peritoneal cavity; one penetrated the liver; two penetrated the small intestines and two the stomach. Stab wounds have, as a rule, much lower mortality than gunshot wounds and are a great deal easier to

*Read before the Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

handle because the injured organ lies in close proximity to the wound.

There were twenty gunshot wounds of the abdomen with thirteen deaths, or a mortality of 65%. This high mortality rate can possibly be accounted for by the fact that some of these patients were operated on too early and quite a number were drunk on admission to the hospital. However, it compares favorably with many of the mortality rates from different parts of the country. Gouvernor Hospital, New York City, shows a rate of 45%; Charity Hospital in New Orleans, in 1902, 74%. Winslow in a series of cases from University Hospital, Baltimore, 50.2%. Mason of Birmingham, Ala., shows a series varying from 88.8% to 31.5%.

Of the thirteen cases that died, four of the wounds were of the abdomino-thoracic type. Abdominal wounds complicated by injuries to the diaphragm, or chest wall, are always desperate cases. Morelli, in his book on Wounds of Lung and Pleura, says it is the oscillation of the mediastinum caused by the traumatic pneumo-thorax that largely contributes to the immediate shock of these cases.

I have personally observed, in sucking wounds of the thorax, that a suture of the wounds, or even a plugging of the hole with gauze, gives the patient marked immediate relief; so, in these abdomino-thoracic types of injury, I feel that one should first devote his attention to repairing the wound of the diaphragm before giving any time to suturing the intestines.

DIAGNOSIS.

In the majority of perforating wounds of the abdomen the diagnosis is self-evident. There are two main types of cases—first, those in which the abdomen is penetrated directly; second, those in which the penetration is indirect.

TYPE I. In which the abdomen is penetrated directly. In this type the diagnosis is generally apparent, but not necessarily always so. I have seen two cases of gunshot wounds in which, if the bullet had traversed the shortest route between its entrance and exit wound, there would have

been a perforation of the abdominal viscera, yet there were no perforations, as confirmed by operation.

SUMMARY OF CASE I. M. S., white male, age 21, was seen in consultation, out of the city, with a bullet wound; its point of entrance near the outer edge of the right rectus muscle; its point of exit in the right loin about two and one-half inches from the spinal column. Was brought in to hospital, abdomen opened, and it was found the peritoneal cavity had not been entered. Recovered.

It is well to call to mind the well known fact that bullets can, will and do ricochet, and that its track may not be straight. However, it is of diagnostic value to plot out, in your mind's eye, the structures that would be damaged, in an imaginary line, from its point of entrance to exit, or, in case it has no exit wound, then from its entrance to its localization as confirmed by the fluoroscope.

TYPE II. In which the abdomen is penetrated indirectly. In this type of case, it is at times very difficult to decide whether wounds of the thoracic, lumbar, sacral pelvic or gluteal regions have an intra-abdominal entry. This can only be surmised by indefinite abdominal signs and general symptoms, or confirmed by exploratory operation.

Some of the points that have been of value to me are:

1. The position of the injury and its direction, if possible to determine. Here the entrance and exit wounds are of great value; or, if there is no exit wound, the direction of the missile can sometimes be determined from the appearance of its entrance wound, as was brought out by Connors of New York.

2. The facial expression is usually one of anxiety.

3. Pain is not of great value and may or may not be present at first, while various reflections are occasionally complained of.

SUMMARY OF CASE II. J. D., white male, age 29, was brought to hospital from automobile accident complaining of pain in right shoulder and right chest on respira-

tion. Abdominal examination negative. Ten hours later he developed symptoms of abdominal pathology. The abdomen was opened and he was found to have a rupture of the right lobe of the liver. Recovery. I report this case to show that reflected pain can be misleading.

4. Tenderness is a fairly constant and reliable sign, that is, tenderness elicited on moderate pressure over injured viscera. It is necessary, however, to exclude muscular tenderness along the path of the wound.

5. Abdominal rigidity, or its absence, is often misleading. I have seen flaccid abdominal walls in perforations, and rigid abdominal walls where the lesion was wholly intra-thoracic. The diagnostic sign of Vale, of Detroit, has been of some help to me; namely, when the lesion is intra-thoracic the rigidity of the abdomen relaxes at the end of expiration. This is typical and is not present at any other point in the respiratory excursion. When the lesion is intra-peritoneal the rigidity is usually constant, but, if intermittent, is not regularly so, as in chest condition.

6. Vomiting usually present, but not necessarily so.

7. The fluoroscope is, in some cases, of great value, enabling one to find the missile inside the peritoneal cavity.

8. The stethoscope is of value in that some cases have the so-called "silent abdomen."

9. Increasing pulse rate and continuous pain for over six hours is strongly diagnostic of an intra-abdominal lesion.

TREATMENT.

To present this comprehensively would be an unlimited task. No two cases offer the same problem, and only in a general way can some of the salient points be mentioned.

A gunshot wound or stab wound of the abdomen is sufficient indication for an exploratory operation, when there is even a faint suspicion of abdominal entry. If no damage to the intra-abdominal structure has been done, the patient has been put to only temporary inconvenience; whereas, if a hollow viscus has been injured, a life may be saved.

Cases of injury to the abdominal region should be kept under very careful observation, bearing in mind that the symptoms may be delayed for several hours, especially when the injury is to some organ other than to the intestinal tract.

Operation should never be undertaken before the patient has recovered from his shock unless you feel fairly certain that the symptoms he is showing are due primarily to hemorrhage.

Once operation has been decided, plenty of morphine keeps the intestines quiet, and apparent improvement under morphine should never change your plans to operate. During the operation the search for lacerations must be thoroughly and quickly done, bearing in mind that too much surgery is just as fatal as too little. A complete evisceration is the quickest method to inspect the entire intestinal tract. The suggestion of Eisendrath of Chicago, namely, to place a loose catgut suture around the small intestine at the point of beginning examination, and then to examine both ways from this, is a good method to keep from overlooking any part of the tract.

In the abdomino-thoracic type of injury, when it is possible, always choose the thoracic wound first, especially if it is a sucking wound, as the to and fro motion of the mediastinal content contributes very markedly to the patient's shock.

In selected cases auto-transfusion can be used. I employed it in one of these cases with very excellent results.

CONCLUSIONS.

1. Shock plays an important part in the mortality of abdominal wounds.

2. When in doubt as to whether an abdominal viscera has been perforated—operate.

3. In the abdomino-thoracic type of injury, devote your attention to first closing the wounds of the pleura or diaphragm, as this lessens the shock materially.

4. Give plenty of morphine between the time of injury and time of operation.

DISCUSSION.

DR. H. H. SHOULDERS, Nashville: I rise particularly to commend the essayist on his con-

tention that there should not be immediate operation. The contention that there will be sufficient hemorrhage to cause death within a short time cannot be sustained unless there is a much larger opening than usually occurs from gunshot wounds of the abdomen. I think the explanation of the small amount of intestinal content that is spilled is that the folds of mucous membrane shut off the going. I think the matter of reacting the patient from shock should be accomplished before any operative procedure is undertaken if we are sure the condition is not due to hemorrhage. It is not usual for the abdominal cases to have hemorrhage that proves fatal within a short space of time.

As to auto-transfusion, that would be a risky matter, it seems to me. We are not sure that a hollow viscus is not injured and therefore we might be injecting an infected material into the blood stream.

DR. RICHARD A. BARR, Nashville: I hope a difference of opinion will not be held as criticism of Dr. Davis' position. I cannot myself differentiate between shock due to hemorrhage and shock from any other cause. Indeed, there is no difference if the theory ordinarily held is correct, that blood accumulates in the splanchnic area, and so is withdrawn from the circulation as completely as if it was lost from the blood vessels.

Shock from any other cause than hemorrhage is not a contraindication to operation since in gun shot wounds it must be largely psychic. A bullet cannot produce traumatic shock without hemorrhage. Intra-abdominal hemorrhage demands operation for its control. A general anesthetic is a stimulant in psychic shock. So in a general way I think one can justify holding the position that shock is not a contraindication to prompt operation in gun shot wounds of the abdomen.

Sucking wounds of the thorax must, of course, be closed, but other wounds of the thorax had best be ignored so far as surgical attention to them is concerned, particularly in the presence of a complicating abdominal injury. The same is true of bullet wounds of the diaphragm.

I have only one rule in gun shot wounds of the abdomen when seen early. Operate as soon as preparation can be made unless the patient is already hopeless from hemorrhage. The absence of symptoms of perforation means absolutely nothing. Determine the course of the bullet, and assume that all viscera lying in its line of travel have been injured until you prove that they have not.

Do not overlook the value of local anesthesia for exploring the belly wall. It may sometimes be used for such intra-abdominal investigation as is needed, though for handling injuries of the viscera it will usually be necessary to add some general anesthetic.

DR. HENRY S. MORRIS, Nashville: The

statements of Dr. Davis and Dr. Barr are true to a very great extent. I think it is a question whether we can tell or not beforehand what the patient will do if he is operated on and whether he will do anything at all. I wish to recite one case we had when I was connected with the Louisville & Nashville. A colored boy was lying on the bed playing with two or three other children and they got hold of a .44 gun. One child took the gun and fired it and the bullet went into the right arm, just above the elbow, through the fatty part of the biceps, made an exit on the inside and at the lateral border of the rib, went through, passed through the pleura, lungs and mediastinum, probably escaping the heart, went on through the other side of the lung, through both pleura, and then went through the other arm and out on the external part of the left arm. That child had a pulse of 250, quite a good deal of shock and a few things like that. We closed the external openings and put on an ice pack and took care of it, and that child got well in spite of the doctor!

Another case is reported by Dalton, where a man was loading with a 3-foot drill and, exploding prematurely, it passed up from the chin through the longitudinal sinus and the man lived for twenty-five years.

DR. MURRAY B. DAVIS, Nashville: I agree with Dr. Shoulders that auto-transfusion is a more or less desperate thing to do, but these are desperate cases. We put dry pads quickly into the peritoneal cavity, locate the bleeding point and clamp it with a hemostat, and the pads soak up a good deal of the blood. Then it does not take long to inspect the whole intestinal tract. If there is no perforation, I think we are justified in squeezing this blood out of the pads into a container, straining it through several layers of citrated gauze, citrating it and putting it back into the veins.

As to the extreme difficulty of distinguishing between shock and hemorrhage, I agree with Dr. Barr. I concluded that in some of these cases where the patient died, the shock was not due to hemorrhage, but to the fact that I operated too early. As to his statement that shock is primarily caused by hemorrhage, I cannot see why the force of the bullet in penetrating the abdominal wall or the intestines will not give the patient as much shock as a knockout blow will to the solar plexus.

As for closing the wounds in the diaphragm, first, if the incision is long enough, I have found that it is oftentimes easy to attend to the diaphragmatic wound, and that it lessens the shocked condition greatly to attend to the thoracic wound first, as this stops the to and fro motions of the mediastinal contents with each respiration.

I thank the gentlemen very kindly for their discussion.

FRACTURES OF THE ELBOW*

HENRY Cox, M.D., Nashville.

THE treatment of injuries in the region of the elbow joint, followed by poor functional results, is notoriously liable to lead to suits for malpractice. To obtain the maximum return of usefulness in an injured limb would be brought about by an exact reconstruction of bone, but as this is not always possible or expedient, our chief aim should be complete restoration of function. These fractures are frequent injuries in children and are not uncommon in adults. It is not the purpose of this paper to bring any new ideas to your attention, but merely to restate facts already known and to stress the importance of a correct diagnosis and treatment in injuries of the elbow joint.

ANATOMICAL CONSIDERATIONS.

The elbow is a typical ginglymus diarthrosis, or hinge joint. A normal uninjured elbow shows the inner condyle of the humerus at a lower level than the outer condyle when the arm is parallel with the erect trunk. The carrying angle is formed by this arrangement, which is a very necessary position to maintain after injury. The tip of the olecranon is slightly above the line drawn between the condyles when the arm is extended. The three points will be found in the same plane when the elbow is at right angle. The head of the radius may be felt about one-half inch below the external condyle when the forearm is supinated and pronated. By comparing the measurements between the condyles and from the acromial process to the external condyle of the injured with the uninjured elbow; by gentle manipulation of the injured elbow and determining the relations of the external and internal condyles to the olecranon; by noting if the head of the

radius moves on pronation and supination; the presence of crepitus, localized tenderness, or preternatural mobility, a correct diagnosis can usually be made. However, there is great swelling early in fracture of the elbow, the swelling reaching its maximum in about forty-eight to seventy-two hours, and diagnosis by palpation and manipulation is difficult. An x-ray examination of both elbows in antero-posterior and lateral views should be made for comparison before and after reduction of the fracture. It is a bulwark of defense in a medico-legal case. Remember, however, it is impossible in many cases in young children, despite excellent pictures, to diagnose elbow fractures by means of x-ray, and here our tactile education is invaluable. Halstead says, "Be alert and do not allow the Roentgen ray to make us lazy."

CLASSIFICATION.

For ease of reference fractures of the elbow may be grouped in the following manner:

Lesions of lower end of humerus:

1. Supracondylar
2. Epiphyseal
3. Intercondylar or atypical
4. External condylar
5. Internal condylar
6. Capitulum
7. Trochlear

Lesions of radius and ulna:

1. Head and neck of radius
2. Olecranon process of ulna
3. Coronoid process of ulna.

1. Supracondylar, or transverse, fractures just above the tips of internal and external condyles are found in one-third of the cases at lower end of humerus. The upper fragment is displaced anteriorly very often in children because the capsule is stronger than the attached bone. It results

*Read before the meeting of the Middle Tennessee Medical Association, held at Fayetteville, Tennessee, November 12 and 13, 1925.

from a fall on outstretched hand in children and from a direct blow in adults.

2. Epiphyseal separation may occur any time before the seventeenth year when the lower epiphysis of the humerus, which includes the external epicondyle, capitulum and trochlea, unites to the shaft. The internal epicondyle unites about the thirteenth year. Diagnosis is made by age of patient, history of accident, muffled crepitus, and antero-posterior mobility.

3. Intercondylar is an atypical T or Y fracture, its characteristic feature being the separation of the condyles from each other and from the shaft. It occurs most often in adults and is due to direct violence. Often there is a great displacement of fragments and considerable traumatism to the surrounding soft tissue.

4. External condylar fractures are most frequently seen in children as a result of a fall directly on the elbow. It occurs in about seventeen per cent of fractures of lower end of the humerus, according to Gilcrest. The line of break is from the joint obliquely upward and outward.

5. Internal condylar fractures are characterized by marked swelling, abnormal lateral mobility, crepitus, and diminution of the carrying angle if there is upward displacement of the condyle.

6. Fractures of the head and neck of the radius are not rare. The fragment is usually displaced outward and forward, and the forearm cannot be supinated or pronated, but can be extended and flexed.

7. Coronoid process of ulna fracture is due to backward dislocation and its danger is obstructive spur in joint.

8. Fracture of olecranon involves the elbow joint and occurs usually at base, due to direct injury, together with muscular contraction (triceps). There is deformity, localized pain, inability to extend the forearm forcibly, with a distinct separation of fragments. This fracture usually occurs in adults.

TREATMENT.

The fully flexed, or Jones, position, gives the best results in all fractures in the vicinity of the elbow joint, with the exception of

the olecranon. Splints are unnecessary. The advantages of the flexed elbow position are:

(a) Complete anatomical reposition of fragments;

(b) Retention of flexion function of joint and

(c) Co-operation with gravity in subsequent restoration of function.

Reduction is effected preferably under a fluoroscope and with patient anaesthetized, by drawing on the forearm, with lateral pressure upon loose fragments to correct displacement, and slowly flex elbow to an acute angle with forearm supinated. The ball of the thumb then rests against the neck. The wrist is bandaged and the bandage is then passed around the neck through a rubber tube. The radial pulse is examined to ascertain the proper circulation. This position is maintained for three to six weeks. After the second week the forearm is lowered a few degrees every four or five days until the forearm can be fully extended. Passive pronation and supination should be administered gently at the end of the third week, the forearm being replaced in sling. If full extension has not been attained at the sixth to eighth week the patient is instructed to carry a small weight in hand for a short time each day. The weight and length of time it is carried are gradually increased. If a rebellious reaction follows it indicates nature's plea for more rest, and no time can be saved by hurrying mobilization. Full extension may be also obtained by having the patient swing from parallel bars for a short time each day, supporting an increasing amount of weight with the injured arm. Massage and application of heat are very beneficial.

Fracture of the olecranon is best treated in the extended position, upon a well-padded splint the width of the arm and extending from the anterior axillary margin to the tips of the fingers. The use of the Hale hook tractor may be advantageously used to secure apposition of fragments in some cases. An open operation is necessary if apposition of fragments cannot be secured and there is separation of the fragments with lacerations of the lateral fascia. After

two weeks passive motion is begun, flexing the elbow five or ten degrees each day. Union of the fragments takes place in three to four weeks. After six to ten weeks the elbow joint should be normal.

PROGNOSIS.

A guarded outlook should be expressed, particularly with reference to the function of the joint. Some limitation of motion may exist after all that is possible has been done. Although anatomically perfect results are not always obtained, most fractures of this region recover with a useful arm.

May I be pardoned for saying just a word as to the time for reduction of fractures? It is an erroneous idea to wait ten or twelve days until the swelling subsides. Much swelling is often prevented by an early re-

duction. Repair does not go on indefinitely; therefore, it must be conserved and not wasted.

SUMMARY.

1. An x-ray examination of both elbows in two views before and after reduction—to

- (a) Confirm the diagnosis
- (b) For comparison after reduction, and
- (c) For medico-legal reasons.

2. An early, efficient reduction, preferably under a fluoroscope with the patient completely anaesthetized.

3. Position of acute flexion with supination.

4. Operation is indicated when reduction of the fracture is impossible or deformed union is present.

LATENT SYPHILIS AND DIAGNOSTIC PROBLEMS

LYLE MOTLEY, M.D., F.A.C.P.,

Dyersburg, Tenn.

ABOUT eight years ago a friend, a physician of 45 years, of successful attainments and unquestioned morals, married, with healthy wife and children, consulted me regarding loss of weight, anorexia, malaise, pallor, etc. What I called at that time a complete study of his case was negative except for the pallor, moderate secondary anemia, and slight induration in his epigastrium. That is, physical and x-ray examinations of his lungs, heart and gastro-intestinal tract were repeatedly negative, gastric analyses, examinations of feces, blood, urine, etc., were all negative. I had about decided exploratory laparotomy at the suggestion of a surgical consultant when I suddenly was called to military service. Within a few days after I left, the patient consulted a clinician in another city. He did the only thing that I had not done and obtained a four plus Wassermann reaction. Anti-syphilitic treatment promptly cleared up all symptoms. He gave a flat and straightforward negative response to my rather timid inquiries into a possible venereal history, and close physical examination failed to show the slightest clinical signs of syphilis as such.

Since this enlightening and humiliating experience, every patient who comes under my care has one or more Wassermann tests made on him, and for the last four years we have run Wassermann tests on all patients entering the Baird-Dulaney Hospital, as a routine, regardless of the nature of their illness. The result of this procedure in my own practice, together with the results on the hospital patients, have impressed me more all the time with the importance of the problem of latent syphilis.

Case 1. An unmarried woman of 38 years was referred to me for nervousness, loss of weight, anorexia, indigestion with belching and heart-

burn, and general malaise. Examinations were all negative except for gastric achylia. There was no history that would suggest syphilis and nothing in the physical examination to suggest it. Wassermann, four, plus at two different times. Treatment cleared up all symptoms, including the achylia.

Case 2. A young man of 19 was referred to me by his family physician to see if I could lend any aid in clearing up his rheumatism, which had been resistant to all the usual treatment. His history showed nothing suggestive of syphilis and physical examination was entirely negative except for a swollen and painful knee joint, a low grade fever and slight pallor. All x-ray and laboratory studies were negative except the Wassermann test, which was four plus twice. Treatment promptly cleared up all symptoms.

Case 3. A traveling man consulted me for lumbago of over a year's duration. He had consulted various physicians who had removed his tonsils, had his teeth extracted, saturated him with salicylates, given him various phylacogens, etc., all without the slightest effect on his trouble. The history was negative for anything suggesting syphilis. Physical examination was negative except for a rigidity and tenderness of right lumbar muscles with fixation of back. X-ray studies of bony structures were negative. All laboratory studies were negative except the Wassermann, which was four plus. Three days after the first dose of arsphenamin all symptoms had completely disappeared.

Case 4. A patient entered the Baird-Dulaney hospital with ununited fractures of both bones of both legs. The fractures had been sustained in an airplane crash and had been reduced and put in casts in a hospital in another state nine weeks previously. There was considerable movement between the fragments of both legs. The routine Wassermann test was four plus. After this was discovered a careful physical examination failed to reveal the slightest evidence of syphilis, though the patient freely admitted a small sore on his penis ten years previously which was dismissed by his physician a "a hair cut" and not treated. This was not followed by any secondary manifestations and his health had been perfect since. Freshening of the ends of the fragments and antisyphilitic treatment resulted in perfect union.

Case 5. A widow of 60 years, of a prominent family and unquestioned past moral character, complained of recurring headaches that had resisted all usual treatment. History was negative for suggestions of syphilis, husband having died with pneumonia. All physical, x-ray and laboratory studies were negative except Wassermann test, which was positive when repeated three times. Upon being informed of the situation the patient showed a very intelligent interest in aiding me to clear the matter and called my attention to the fact that five years previous-

ly, while living in another city, she had a hard, elevated, rather painless lesion on the dorsum of her right hand that had resisted all treatment, including x-ray, for about four weeks and had finally healed spontaneously about two or three weeks after the cessation of all treatment. The site of what was evidently a chancre presented a small thin scar, the appearance of which should have excited my suspicion on physical examination. Treatment promptly relieved the headache.

Case 6. A physician in another town sent his daughter to me for examination. She complained of loss of weight, low grade afternoon fever, fatigue, malaise, anorexia and a hacking, unproductive cough. There was nothing in the history suggestive of syphilis as such. Physical examination was negative except for the low grade fever, somewhat rapid pulse and slight pallor. Nothing definite was found in the lungs on either physical or x-ray examination, and all laboratory studies were negative except the Wassermann, which was positive. Treatment promptly relieved all symptoms and weight went back to normal.

Case 7. A man of 35 complained of dyspnoea, loss of weight, swelling of ankles, weakness, and pounding heart. He had previously consulted four or more physicians within three months, all of whom had made a correct anatomical diagnosis and prescribed about the same treatment. However, he was getting progressively worse and had reached the stage where he was unable to sleep for smothering spells and could not be comfortable recumbent. Physical examination and laboratory studies showed the usual picture of advanced cardiac decomposition. The history was negative for suggestions of syphilis and a long hard spell of rheumatic fever was prominent. The anatomical diagnosis being clearly aortic insufficiency and mitral stenosis with advanced myocardial failure, the pathology was attributed to rheumatic fever and the usual treatment instituted. However, the next day his routine Wassermann was four plus. Treatment has greatly improved his heart condition and at present he is entirely free of subjective symptoms, but he has an irreparably damaged heart, his life will be shortened and his efficiency greatly curtailed. Had the nature of his heart trouble been detected earlier it is very possible that he would have had a relatively normal heart now.

These cases are relatively rare, of course, but are fairly typical of many similar cases encountered in medical practice during the past several years, and which presented a great variety of symptom complexes. Such cases illustrate very important points that it is necessary to keep in mind when a diagnostic problem is presented for solution, but which are apparently lost sight of by some of us from time to time. Syphilis is a disease that is protean in its manifestations to the extent that there is no clinical picture or syndrome that it cannot simulate faithfully. Dr. Osler said, "Know syphilis in all its manifestations and relations, and all other things clinical will be added unto

you." With our modern refinement of diagnostic technique and improvements in clinical medicine the possibilities of recognizing the various manifestations of the disease are greater than ever before, but still syphilis is often unrecognized. Philippe Ricord in the early part of the nineteenth century exclaimed: "Oh, syphilis, when wilt thou be understood." Today the pathology, serology and chemotherapy of syphilis is understood beyond the expectations of this great clinician, but as a clinical problem its many aspects are still not generally as thoroughly understood as they should be. The all too frequent mental picture and conception of syphilis consists of a skin rash with mucous patches and bone pains in a patient whose morals are not considered to be the best and who gives a history of venereal exposure and a genital sore some time in the recent past. This familiar picture is not nearly as common as it once was, as syphilis as a frank clinical disease has been largely replaced by the "insidious, sneaky form." The florid "typical" case is easily recognized, but its ease of recognition makes it of much less importance than the case in which syphilitic manifestations as such are not present. Kilduffe says: "The literature is full of, and the unrecorded experience of physicians abounds in, cases of tabes operated upon for gastric ulcers; of neurosyphilis masquerading as nervous breakdowns and the like; of cardiovascular syphilis unsuspected, for, unfortunately for himself, the latent syphilitic is as likely as not to seek medical advice for symptoms not at all suggestive of syphilis on their face value: for "stomach trouble," vague and ambulatory pains, high blood pressure, and the like—and all too often he receives treatment for just that of which he complains. "Stokes and Brown report a study of two hundred syphilitics whose main complaint was "stomach trouble," with heartburn, belching, pain, nausea and indigestion. Thirty-five were subjected to needless operation.

Syphilis is no respecter of persons, and is not confined to the city population, to the lower classes or to the morally delinquent.

It is found frequently in the most remote country districts and in the most virtuous individuals. It occurs in the aged and in the unborn child. The cases just reported were encountered in a consultation practice in a small city and occurred in patients from neighboring villages, towns and country districts.

In the search for syphilis a negative history is of no importance whatever. In talking over one of the cases reported with one of the physicians who had previously examined and treated him, the physician expressed surprise, as the patient had told him very positively that he had never had syphilis. A patient may be honestly mistaken in giving a negative history. I have had two patients who in good faith denied the existence of a genital sore or any secondaries, who, when confronted with the fact that their disability was due to syphilis later remembered that twenty-five and twenty-seven years before, respectively, they had a small penile sore that was rather painless and hard, lasting two or three weeks and followed soon after by ulcers of the throat, and in one by a slight skin rash. During the intervening time both had been in perfect health and at the time I saw them neither had any symptoms of syphilis per se. History-taking in general is an art, and in a well taken history there will be frequently found suggestive "leads," among some of the most suggestive being a past genital lesion of any description and bearing any label, a sore throat of unusual duration, frequently accompanied by hoarseness, a period of headache, frequently worse nocturnally. In the female, one or more unexplained miscarriages; in the male, miscarriages or barrenness in the wife; in both sexes, by abnormalities of offspring. The cause of parents' death, and the health of parents are of importance. When searching for a history suggestive of syphilis Broeman says that one should "combine the astuteness of a prosecuting attorney with the adroitness of a diplomat."

In the physical examination of patients

suggestive signs of syphilis are frequently overlooked by lack of thoroughness and detail, yet in many cases there is nothing whatever to suggest the presence of the disease. Superficial lymphadenopathy, particularly the epitrochlear nodes, sluggish pupillary reaction to light, roughening of the anterior borders of the tibiae, suggestive genital scars and scars elsewhere, absence or great diminution of patellar reflexes, etc., all call for further investigation. In a certain number of cases there will be nothing in the physical examination or history that will suggest syphilis to the most astute clinician, and in these cases it is the routine Wassermann test that reveals the true condition.

Since there are a certain number of cases of latent syphilis that are totally unsuspected even after the most painstaking history and physical examination, and which cause chronic disabilities with almost any symptom complex, it seems obvious to me that we owe it to our patients to give them the advantage of a Wassermann test as a routine measure. I believe that a routine Wassermann test in the first examination of a patient is as important as the routine urinalysis, heart and lung examination, and temperature observation, which all of us do as a matter of course. I do not, of course, advance this as an ideal solution of the problem, because regardless of the Wassermann test syphilis will ever be a problem that will require an exhaustive study of the patient himself. But my experience and that of others has conclusively demonstrated to me that without the aid of the test there are a certain number of cases, small it is true, but important, that will escape detection. Not one realizes more than myself the limitations of the test, and too much should not be expected of it. In a certain number of cases the Wassermann test will be negative even when carried out by the most skillful serologist. This is not due to the fault of the laboratory, but to the fact that the patient's tissues at that particular time were not reacting to the infection and producing the substance which causes the blood serum to give a positive test. Fig-

ures of investigators show that the syphilitic with a negative Wassermann nearly always has clear-cut physical evidence of syphilis and will therefore not be likely overlooked. However, it has been shown in the last few years that with the test carried out by modern technique by competent serologists, a positive Wassermann test means syphilis with very few exceptions, and these exceptions are rarely met in the practice of the average practitioner in the United States. I do not mean that a patient should be labeled as a syphilitic on the strength of one-plus, two-plus, three-plus or even four-plus test in the entire absence of other indications, but where the test repeated gives the same positive results we can keep our counsel while we observe the results of therapeutic tests, provocative salvarsan injections, etc. Kilduffe says: "Let it be remembered that the complement fixation test has been utilized in untold hundreds of thousands of cases; and that it has stood the test of time and practice; that refinements of technique and investigative studies have shown it to be the most delicate and constant single symptom of syphilis. Properly performed, checked, and controlled, and intelligently utilized and interpreted, its results are remarkably constant and reliable, and under these circumstances a persistently positive reaction can be looked upon with confidence and cannot be disregarded. It will never, however, relieve the clinician of a careful study of each individual case."

I will not here enter into a discussion of the technical aspects of the Wassermann test, but it might be wise to state that the variation in the results of tests and much of the resulting criticism by clinicians is due to the many different methods employed by different serologists. This fact seems to me to be the weakest point in the test and the one most easily corrected. To overcome this weakness, Kolmer and his associates devoted several years to the investigation of every aspect of the test and

to a study of every possible factor that could influence it. As a result of his studies he developed the so-called "standard method" that at present appears to be the ideal method of performing the test. There has been accumulated a voluminous literature on his method, and as a result of thousands of comparative studies with other methods nearly all serologists are agreed that it is the method that gives the most reliable results of any yet evolved. On the other hand there are methods being employed by some laboratories that are not reliable and give many false results, causing unnecessary confusion to the clinician and criticism of the test. Therefore, until the adoption by all laboratories of some standard method of making this test, using standard reagents, it will pay the practitioner to find out something about the reliability of the method employed on the blood he sends to the laboratory. While the average practitioner of course is not in a position to pass on the different points in any method, at present and probably for some time to come, we can feel safe in relying on the results from any laboratory that uses Kolmer's method without a single variation or modification.

SUMMARY.

1. There are a certain number of cases of chronic illness that are due to latent syphilis, and of these there are a number that will escape detection by the most careful clinical investigation and which routine Wassermann tests will discover. Therefore a routine Wassermann test should be made on every patient at the first examination.

2. The Wassermann test properly performed is the most constant single symptom of syphilis and is of indispensable aid in the diagnosis of syphilis, but the results of the test, particularly negative, should not replace a thorough and exhaustive clinical investigation of every aspect of the patient himself.

THE WILLIAMSON COUNTY EPIDEMIC OF ANTERIO POLIO-MYELITIS*

K. S. HOWLETT, M.D., Franklin, Tenn.

IN a period of about six weeks, from September 15 to October 27 of this year, in Williamson County, with a population of less than 24,000, there were reported eight cases of polio-myelitis with three deaths and two of very extensive paralysis. In the town of Franklin, with a population of 3,500, three cases with one death and one of extensive paralysis were reported.

There have probably not been that many cases of this disease all together in the county within the past twenty-five years, and at only one time within that period has there been more than one case at the same time in the county.

In 1912 two cases developed almost simultaneously in the practice of Dr. W. W. Graham, one of our well-known physicians (one being his own son), and a few days after still another came down in an adjoining neighborhood, making three cases occurring at or near the same time.

So far as I can ascertain, there has never, within the memory of the oldest physician, been a death from this disease in the county until this year. Hence, it is not surprising that these eight cases with the high mortality and deplorable sequellae should have caused considerable alarm among the anxious mothers of our county. It seems entirely proper to consider this an epidemic and a serious one.

Inquiry among the attendant physicians brings out the fact that these cases presented a uniformity of clinical symptoms which would seem to make a pre-paralytic diagnosis (at least a tentative one) less difficult, thus enabling us to try out the suggested therapeutic measures early in

our efforts to lessen the mortality and the distressing paralyzes which follow.

The cases were all white. There were five males and three females, about the usual proportion for the sexes. We are told that ninety-eight per cent of cases of this disease are under fifteen years and seventy-five per cent of these are under five. The age incidence of these cases was higher than this, eighteen, seventeen, thirteen, six and a half, six, four and three and one-half. Three of the group were in their teens, and five, more than half, over five. The mortality rate was high, three out of eight, or thirty-six plus, per cent. This, with the very extensive paralysis in two others, indicates its malignancy. Of these deaths one was eighteen, one thirteen, and one six and a half, showing a higher death rate among older children, which corresponds to reports from other epidemics.

REPORT OF CASES.

The first was a six and a half year old boy. He was rather a delicate, undersized boy, just entering his first year in school. As a small child he had had rickets, but under cod liver oil, forced feeding, etc., he had seemingly recovered, and was at this time nearer normal for his age, stronger and more vigorous than at any time of his life.

A near neighbor, an adult female, had died from cerebro-spinal meningitis, about three weeks previously. This boy's mother had been, and was still, a carrier of the meningo-cocci, as shown by swabs from the throat and nose.

He first complained of being somewhat indisposed on the morning of September 22. He had a fresh smallpox vaccination sore on his arm, to which his indisposition was, at first, attributed. While he was

*Read before the Middle Tennessee Medical Association, Fayetteville, Tennessee, November 12, 1925.

kept from school, I was not called until night, twelve hours later.

He complained of severe headache, extending to the back of his neck. Meningitis was suspected, on account of the previous exposure, and the rigidity of the neck carefully investigated. However, he could, when asked to do so, put his chin down on his chest, and no Kernig could be elicited.

The mental condition was normal, though the child was irritable and nervous. He hardly seemed sick enough for meningitis and polio-myelitis was not thought of, as at this time none of this disease had been diagnosed or reported in the county. He had a temperature of 103, pulse and respiration rapid. There was no cough and the lungs were clear. The pharynx showed a distinct and diffuse redness and diagnosis of acute pharyngitis was made, as this seemed to satisfactorily account for all the symptoms presented.

By the way, probably the chief cause of the failure to diagnose polio-myelitis before the paralysis comes on, is the extreme rarity of the disease in an ordinary country practice. This causes us never to suspect it and we are led to look elsewhere to account for the presenting symptoms.

The next morning the mother reported the patient generally better and more comfortable, with a temperature of 102 and some appetite. However, the headache returned during the day and became severe. I saw him again later in the afternoon. His temperature was 102.5 and the pulse and respiration less rapid than the night before. He was less irritable and nervous, and, except for the headache, distinctly more comfortable. However, the neck was slightly more rigid and retracted, and, while it could be flexed so as to bring the chin down, there was some resistance and evidence of pain upon the attempt. The same applied to the Kernig. The leg could be extended upon the flexed thigh, but elicited pain and some resistance. The knee jerks were slightly exaggerated. Meningitis and spinal puncture were dis-

cussed, but, because of the apparent improvement from the night before, final decision as to this was postponed until the following day.

The next morning, the third day from the onset, the case was reported to the health authorities, and Dr. L. M. Graves, county health officer, saw the patient with me. While the symptoms seemed hardly distinct enough to justify diagnosis of cerebro-spinal meningitis, spinal puncture was advised and urged and consultation was suggested.

Dr. J. O. Manier saw the patient with us that evening, and spinal puncture was made under ether anaesthesia. The fluid came out under considerable pressure and was perfectly clear. The fluid was sent to the laboratory and the next day Dr. Litterer reported no meningo-cocci and a decreased cell count. However, when I 'phoned the encouraging report to the mother, she informed me that the boy said that his left hand was drawing, and that he could not open it when he closed it. This was suggestive, and I immediately went to see him.

The little fellow, whose mental condition was clear, soon showed me conclusively that the extensor muscles of the left hand were paralyzed, and the diagnosis of infantile paralysis was forced upon me.

Further observation showed rapid abdominal breathing, with practically no chest expansion. The breathing was labored, and slight cyanosis was apparent. It was discovered that the opposite leg, the right, was also affected, the patient being unable to move it. The breathing became rapidly more labored and the cyanosis deepened and the little patient died at three o'clock the next morning, the fifth day, evidently from paralysis of respiration.

His mental condition remained perfectly clear until a few minutes before his death. He suffered severe gastric pains, similar to the gastric crises sometimes observed in tabes, requiring a hypodermic of morphine to relieve it.

The second case was that of a little boy,

three and a half years old, the son of Dr. Frank Stites, of Louisville, Kentucky. He became ill on October 6, and was given calomel by his grandmother with whom he was making his home, his mother being dead. I was called on the second day, and found him with temperature of 101, rapid pulse, some nausea and a red sore throat. His head was retracted and neck slightly rigid. The chin could be forced down on his chest, but this procedure met with resistance and caused some pain. However, a stiff neck appeared to be a personal peculiarity with this boy. He was just recovering from a severe attack of whooping cough, and it had been impossible to get him to bend over when he would have paroxysms of coughing, but instead he would invariably hold his neck stiff and retracted, and would often vomit over his waist front.

Attempts to try out Kernig elicited some pain, just as in the other case. The knee jerks were sluggish, but not entirely abolished.

Polio-myelitis was at once suspected in this case and consultation asked for. Dr. Owen Wilson and Dr. D. C. Seward saw him with me on the second day from the onset.

The diagnosis was not fully concurred in. On account of the recent whooping cough, he was in a run-down condition and some cough still remained; hence it was thought best not to do the spinal puncture.

The treatment was symptomatic only, except that full doses of hexamethylenamin were given, which drug is said to have some specific curative properties in this disease.

On October 9, the fourth day from the onset, paralysis of the extensor muscle of the left leg was suspected and the next day positively demonstrated. There also appeared to be some weakness, though no definite paralysis of the lower lumbar and abdominal muscles. He seemed disinclined to hold himself in an upright sitting posture, and the bowels became obstinately constipated, the feces having to be removed

mechanically a few times.

After a few days, during which the paralysis remained stationary, improvement set in and has been slowly progressing. At this time he seems to have regained the use of all his muscles, even the extensor muscles of the left leg, though there still remains some weakness of these muscles and disinclination to use them.

The third case was one of the fulminant and rapidly fatal type in a thirteen-year-old girl. She became ill at school on October 27. The family physician, Dr. J. W. Greer, was consulted over the telephone, but was not called to see her until October 29.

She had headache, nausea, vomiting and obstinate constipation. She was given calomel, and so much difficulty was experienced in getting the bowels to move afterwards, that obstruction was suspected. However, satisfactory movements were finally obtained and the patient was thought to be positively better. On the night of October 29, the third day of the illness, the mother, for no known reason except the natural anxiety of a mother over a sick child, got out of bed and went to the girl's bedside. She found her awake and seemingly dazed and irrational. She could not be made to fully comprehend what was wanted with her, and in trying to get her aroused and up to the stool, she had an involuntary evacuation of bowels and bladder.

Dr. Greer was called, and, upon his arrival, I was called in consultation. She had a temperature 103 in the rectum, with a pulse rapid and weak. She was choking and strangling from a throat full of mucus, which it appeared impossible for her to get up or to swallow. She would respond slightly when spoken to sharply, open her eyes, and try to speak. She seemed quite uncomfortable and restless, and appeared to be making frantic efforts to clear her throat.

Careful investigation demonstrated a paralysis of the upper left arm, deltoid, pectoral and throat muscles. She could

move the left forearm and the other arm, her legs, and apparently all the other muscles of her body as far as we could ascertain. Her struggles rapidly lessened and soon ceased. She went into a profound coma and died in the early morning of the fourth day of her illness.

The fourth case was attended by Dr. J. O. Walker, of Franklin, to whom I am indebted for notes on this case:

A six-year-old boy, who had been exceptionally strong, vigorous and active, was taken sick on September 27 with fever, nausea and sore throat. He also showed from the beginning stiff and painful neck and slight Kernig, with pain when the test was attempted. The case followed pretty much the same clinical course as the first case reported in this paper. Encephalitis, meningitis and polio-myelitis were considered, but no spinal puncture was done, and no definite diagnosis was made until the fifth day, when paralysis appeared in one arm. The paralysis slowly progressed until both arms, both legs and the entire group of the neck and back muscles were involved. For a time the patient could not raise his head and could scarcely move any muscle of his body or limbs.

After more than a month the improvement is very slight, and, while seemingly continuous, is very slow. He uses one hand to some extent and can turn his head. His general condition is good.

The fifth case was a three-and-a-half-year-old boy, also seen by Dr. Walker, but only one time, and that after the paralysis had developed. The only history obtainable was that the boy had symptoms of severe cold or influenza, with sore throat and stiff neck, accompanied by pain upon movement. The paralysis in this case was quite extensive, involving both arms and both legs, and the improvement has been slow and unsatisfactory.

The sixth case was a girl of eighteen years, seen on the third day of her illness by Dr. J. D. Smith. No accurate history of her illness before this visit could be obtained, save that of indefinite symptoms of cold, with stiff and painful muscles of

the entire body. At the time of this visit the most striking symptom was a sore throat, accompanied by severe pain in muscles and joints, reembling an extensive acute rheumatism. The next day, the fourth of her illness, paralysis developed, was rapidly progressive, and death quickly supervened.

The seventh case was a four-year-old girl, a patient of Dr. B. T. Nolen. She was taken first on Friday, was better on Saturday and well enough to be carried to church on Sunday, and it is doubtful if this illness had any connection with the subsequent illness. On Monday the child was sick again with fever, sore throat, stiff and retracted neck. Meningitis was suspected at once and she was sent to a Nashville hospital and put under the care of Dr. A. W. Harris. Spinal puncture was made. The fluid came out under pressure, but was clear and gave only negative findings. The paralysis, which was delayed beyond that of the other cases, was of the chest and shoulder muscles, was very slight (hardly demonstrable), and promises to clear up completely.

The eighth case was a seventeen-year-old boy, the first to appear in the county. His symptoms were those of a pronounced cerebral involvement, low form of delirium and stupor. On account of inability of having him properly cared for in his home, he was sent to Vanderbilt Hospital and no definite further history has been obtainable, save that of delayed, slow, but rather extensive paralysis, involving the legs chiefly.

While these eight cases occurred in our county within a period of six weeks, no sort of connection, one with another, or exposure one to another, could be traced. No two cases occurred in the same family and of the number of children who were known to be exposed, not one developed the disease.

In analyzing the presenting symptoms, the most uniform and constant were fever of moderate severity, sore throat and stiff and retracted neck. A simple test for demonstrating this last symp-

tom has been suggested, viz: to ask the child to say "yes." Ordinarily in giving assent, the child will bow the head two or three times, while it will be retracted or held perfectly still if any rigidity of the neck exists.

Headache was present in only two and vomiting in three. It is noticeable that while the fever and sore throat did subside from the first day, the nervousness and irritability and the stiff neck grew more pronounced until the paralysis came on.

The deaths all came from the paralysis of the throat and respiratory muscles, indicating the greater danger from involvement of the upper nerve centers. No specific treatment was used in any of these cases, unless the use of hexamethylenamin could be so considered. Spinal puncture was done in two cases, for diagnostic purposes only, and apparently had no effect upon the course of the disease.

Of the various specific measures suggested, the use of the convalescent serum seems to have met with the most favor. Montgomery and Coles, in a recent article in the *Journal of the A. M. A.*, reported a series of cases which were treated by frequent spinal puncture. They claim that this treatment, if used early, lessens mortality and prevents or lessens, to a large extent, the subsequent paralysis. (*Jour-*

nal A. M. A., September 19, 1925, page 890.) They refer favorably to a suggestion of Rosenow, of Rochester, as detailed in the *Journal A. M. A.*, February 7, 1925, page 429, whereby a definite early diagnosis may be made. Rosenow, by his precipitin test, demonstrated the uniform presence of a pleomorphic streptococcus. He claimed that this streptococcus has special neurotrophic qualities; and that its presence can be demonstrated in all cases of polio-myelitis. However, it is found also in a large per cent of those exposed, even those in the same area, and in those infected with scarlet fever.

This lessens the value of this test, and the report of cases as given by Montgomery and Coles is not altogether convincing. One cannot but doubt the accuracy of the diagnosis in some of the cases reported by them, nor put down the suspicion that others might not have developed the paralysis, even though the subarachnoid drainage had not been used.

Rosenow and Nazum have produced a serum which was used extensively last year in the treatment and prophylaxis of this disease, but its value was doubtful and it has not met with general acceptance by the profession.

We are still handicapped in the use of convalescent serum by the difficulty of obtaining the human serum in sufficient quantities for general use.

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J. F. GALLAGHER, M.D. -----Editor

R. C. DERIVAUX, M.D. -----Associate Editor

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EDITORIAL

AN INTERESTING DISCOVERY.

An interesting article which, perhaps, escaped the attention of many of the readers of the Journal will be found on page 183 of the October number. It is entitled "An Epitome of the Transactions of the Tennessee State Medical Society," by J. D. Plunkett, M.D., now deceased, of Nashville. It was reprinted from the transactions of the fifty-sixth annual session of the "Tennessee State Medical Society," which was held in Nashville in the spring of 1889. The article itself deals with the transactions of the twenty-fourth annual session which convened at Nashville, May 4, 1853. It will be seen from this data that the first session of the State Medical Society occurred in 1829. And this contention is further strengthened by the fact that the Tennessee State Medical Society was incorporated by the State Legislature in 1830. The entire act of the Legislature incorporating the State Medical Society, together with the first constitution and by-laws, may be found on page 210 of this issue of the Journal.

The next annual session of the State Medical Association will be held in Memphis next April and will be the ninety-third. This apparent disparagement in the dates may be accounted for by the fact that during the Civil War no meetings were held. The determination of the date of the Centennial Celebration or Diamond Jubilee of our Association, which was computed by Dr. Olin West, the originator of this movement, was no doubt based on the number

of annual sessions which had been held rather than the date of the actual organization and incorporation.

It seems entirely fitting that the date of the Centennial celebration should be held on the anniversary of the year that it came into legal existence, that is, in 1830. If this contention is concurred in, and it should be, the event will take place in 1930. It was voted by the House of Delegates at the annual meeting held in Memphis in 1922, that a history of the Tennessee State Medical Association should be written and published in book form. A committee of three, composed of Dr. Duncan Eve, Sr., Dr. G. C. Savage and Dr. Deering J. Roberts, was appointed to compile the data for such a history. Dr. Roberts, before his death, spent much time at this task and his efforts were crowned by an unusual degree of success. The material which he gathered is now in the possession of Dr. Eve. It is now the duty of the State Society to appoint some one who is capable of utilizing this data and converting it into a continuous narrative. This is a difficult and arduous task and it should be started in ample time so that the completed volume may be distributed, perhaps, as a souvenir of our one hundredth celebration of being an integral part of organized medicine.

DEATHS

Dr. Charles C. Ellis, of -Chattanooga, aged 63, died October 28. Dr. Ellis was a graduate of the Chattanooga Medical College of the class of 1898.

Dr. C. C. D'Armond, aged 83, died at his home in Knoxville, October 28. Dr. D'Armond was a graduate of the University of Louisville, School of Medicine, of the class of 1884.

Dr. C. C. Dearmond, aged 83, one of Knoxville's oldest and best known physicians, died October 31.

Dr. B. D. Bosworth, ex-president of the Tennessee State Medical Association, died at his home in Knoxville, November 3. Dr. Bosworth was 60 years of age and came from a long line of distinguished men. He was a graduate of the University of Louisville School of Medicine of the class of 1887. Dr. Bosworth is survived by Dr. Benjamin B. Bosworth, Jr., of New Orleans, La.

MEDICAL SOCIETIES

The Tri-State Medical Association, bigger and better than ever, will hold its next meeting at Hotel Peabody, January 26, 27 and 28. It was organized in 1883 and has held an annual meeting ever since, except in 1917, when it held a joint session with the Southern Medical Association; again in 1918, when the turmoil attendant upon the Great War and the great burden of the influenza epidemic which rested so heavily on those of the profession who carried on at home as well as did those who were in military service, no session was held; and in 1924 it was decided to hold no meeting in 1925, postponing it until the early part of 1926 because of proximity to dates of other societies which it was feared might affect the attendance mutually. It is believed the change of date will be approved by everyone and that the attendance figures will prove it.

This association is properly proud of its history. Few organizations of any kind can boast of its record. There are dozens of men in its territory who have not missed a meeting in years. Last year the association honored itself in honoring the Nestor of the society, Dr. Dunavant, of Osceola, Arkansas, the surviving member of the committee which wrote the constitution and by-laws of the society at its original meeting in 1883. The appearance of one of its founders upon the floor of the meeting, vigorous in mind and body, possessing a keen interest in matters medical, enjoying a life in a

"green old age," was an inspiration to all. In common with other societies of similar nature it has always been a relaxation from the daily grind for its out-of-town members, particularly, to attend. But the dominant note at all its sessions has been an earnest desire for mental stimulation and profit.

It is unnecessary to attempt the enumeration of nation-wide known members of the profession who have appeared on the programs of this society. Men internationally known have been glad of the opportunity to address it. The Program Committee believes the coming meeting will show a standard of excellence in its program never before attempted. This is said with no disparagement whatsoever of those who have inspired and instructed us in the past. Master minds in medicine have discussed problems of world-wide interest before this association. Problems in a measure peculiar to this section of the country have been attacked with vigor by men from Mississippi, Arkansas and Tennessee, many mental dark spots illuminated and pathological puzzles solved.

For the coming meeting five members from each of the three states have been selected to present papers. Two years ago for certain reasons it was deemed advisable by the Program Committee to have no Memphis physicians prepare papers. That plan is being adhered to still for the next meeting. However, the Memphis profession is expected to take a liberal part in the discussion. A list of those who will make special addresses before the society is given below. It will be well worth the time and money expended by any man who comes and stays for the entire meeting. Last year about five hundred were in attendance, which includes slightly over two hundred who do not live in Memphis, and for the next meeting a much larger attendance is anticipated. Who would not go far and gladly sit at the feet of Rudolph Matas, the master surgeon? Martin H. Fischer, of Cincinnati, has forgotten more and still knows

more about the function of the kidney and the attendant evils of mal-function of that organ than most men who think they are informed to some extent on the subject. Robert L. Babcock, the blind cardiologist, can still teach much about the heart to the vast majority.

Scan this list closely. Read 'em and weep—that is, if you cannot come and hear them!

Dr. Frank Smithies, Professor of Medicine, University of Illinois.

Dr. Julius H. Hess, Professor of Pediatrics, University of Illinois.

Dr. Irving W. Potter, Obstetrician, Buffalo, N. Y.

Dr. Thomas R. Brown, Professor of Clinical Medicine, Johns Hopkins University.

Dr. Robert L. Babcock, Chicago, Ill.

Dr. Rudolph Matas, Professor of Surgery, Tulane University.

Dr. C. Jeff Miller, Professor of Obstetrics and Gynecology, Tulane University.

Dr. C. L. Minor, Asheville, N. C.

Dr. Martin H. Fischer, Professor of Physics, University of Cincinnati.

Dr. W. S. Leathers, Vanderbilt University, Nashville, Tenn.

Dr. B. B. V. Lyon, Gastro-enterologist, Philadelphia, Pa.

Dr. J. L. Tierney, Endocrinologist, St. Louis, Mo.

It is expected one or two more of equal brilliance will be added to this galaxy soon.

Be present and get your mental batteries charged for another year!

A. F. COOPER,
Secretary.

AN EPITOME OF THE TRANSACTIONS OF THE TENNESSEE STATE MEDICAL SOCIETY*

By J. D. PLUNKETT, M.D., Nashville.

(Continued from page 184, October, 1925 issue)

Drs. R. C. Foster, Lipscomb and Whitaker were appointed a committee to memorialize the Legislature "in reference to the manufacture and sale of quack medicine and secret nostrums, so as to secure the passage of a law requiring the recipe of all such to be filed" for public inspection.

Dr. E. B. Haskins offered the following, which was adopted: Resolved, That a committee of three be appointed to prepare a memorial to be presented to the next Legislative Assembly of the State of Tennessee, asking the passage of a law for the registration of births, marriages and deaths, and to frame the outlines of such a law as may seem best suited to the political organization of our State, and report to an adjourned meeting of the Society in November, and that Dr. J. P. Ford, of Nashville, be appointed chairman of said committee. Is it not strange that though it is conceded by all who have given the subject serious thought, that today the one great professional need in Tennessee is vital statistics—the only scientific foundation of scientific medicine—is still unsupplied. As a matter of fact, we find at the end of thirty-six years, which have elapsed since Dr. Haskins' resolution was adopted, that still there is no law upon the statute book of our State providing a system for the collection and preservation of the births, marriages and deaths which occur within the Commonwealth. This is a standing and just reproach to us as a profession, and when we shall stand united before the General Assembly of Tennessee, and earnestly ask the passage of such a law, I feel sure it may be had, and at once. Will you say it shall be done?

Drs. D. W. Yandall, R. C. K. Martin and J. D. Winston were appointed a committee

to prepare a Case Book and submit the the adjourned meeting of the Society (which is to occur in November following).

Drs. R. Martin, Currey and McCombs were appointed a committee to superintend the publication of Minutes of the meeting—were directed to print five hundred copies—fifty to be retained in the hands of the Secretary.

Upon motion of Dr. J. W. King the organization of County Medical Societies was urged throughout the State.

Dr. Bowling offered a resolution that all the names of the members of this Society be printed in the forthcoming Minutes.

Dr. Yandall offered the following:

Resolved, That a prize of \$50 be awarded for the first best, and that a prize of \$25 for the second best original, practical or experimental medical essay by the members of this Society, provided that any of the essays be deemed worthy of said prizes, said essays to be submitted to and reported upon at the next annual meeting of the Society.

On motion of Dr. Avent:

Resolved, That all druggists in Tennessee, who desire the promotion of medical science, be requested to discontinue the sale of nostrums and quack medicines, and that in our purchase of drugs and medicines we will prefer such as may adopt this course.

Dr. J. J. Abernathy, of Murfreesboro, was continued as Orator for next annual session.

The following special committees were appointed:

On the History of Surgery in Tennessee—Dr. B. W. Avent, of Murfreesboro.

On Obstetric Surgery in Tennessee—Prof. J. M. Watson, of Nashville.

On Medical Botany in Tennessee—Dr. Richard O. Currey, of Nashville.

On the Medical Literature of Tennessee—Dr. D. W. Yandall, of Nashville.

On the Medical Biography of Tennessee—Prof. W. K. Bowling of Nashville.

On Epidemic Diseases of Tennessee—Dr. E. B. Haskins, of Clarksville.

On the History of Continued Fevers in Tennessee—Dr. W. P. Jones, of Nashville.

On motion of Dr. Haskins it was resolved that the adjourned meeting of the Society be held on the second Wednesday in November next, in the city of Nashville, at 10 A.M.

ACT OF INCORPORATION.

An Act to incorporate the Medical Society in the State of Tennessee.

As health is universally acknowledged to be essentially necessary to the happiness and prosperity of society, and its preservation and recovery are essentially connected with an intimate acquaintance with the animal economy, and the properties and efforts of medicine; and as institutions formed on liberal principles, cherished by an intelligent community, and patronized by law, are eminently calculated to encourage the propagation and dissemination of such knowledge, therefore—

Section 1. Be it enacted by the General Assembly of Tennessee, That there shall be appointed by a resolution of the General Assembly, a sufficient number of learned and intelligent practicing physicians in this State, who, when so appointed, are hereby constituted and formed into a body politic and corporate, by the name of the "Medical Society of the State of Tennessee," and they, and such other persons as said board may hereafter elect, in the manner prescribed in this Act, and their successors, shall continue to be a body politic and corporate, until the year 1860.

Sec. 2. Be it enacted, That the mem-

bers of the society may, from time to time, elect a President, Vice-President and Secretary, and such other officers as they may think necessary and convenient, and the members of said society shall have power to determine the respective duties of the several officers, the length of time they shall hold their respective offices; also to authorize their President, or some other person, to administer such oaths to those officers as the society shall think proper, not repugnant to the laws of this State, or of the United States, and shall have a common seal and power to alter and renew the same at their pleasure.

Sec. 3. Be it enacted, That the members of said society may sue and be sued, in all actions, real, personal and mixed, and prosecute and defend the same to final judgment and execution, by the name and style of the "Medical Society of Tennessee."

Sec. 4. Be it enacted, That said society may elect, under such regulations as it may adopt, such persons as may be thought worthy practitioners of medicine and surgery, to be members thereof, and such person or persons, so elected, shall be entitled to all the privileges and immunities of said society, provided that he or they shall within one year from the time of his or their election, sign the by-laws and regulations of said society or otherwise in writing signify his or their assent thereto; and shall have power to expel any of its members for misconduct,

Sec. 5. Be it enacted, That said society shall have power and authority to enact such laws and regulations for the government of the same, as are not repugnant to the Constitution and laws of this State, or of the United States, and to annex reasonable fines and penalties, not exceeding fifty dollars, to be sued for and recovered by said society, for their use and benefit, in any court of law in this State; and also to fix the times and places of the meetings of said society, which shall be at least once in each year.

Sec. 6. Be it enacted, That the first meeting of said society shall be held in

the town of Nashville, in this State, on the first Monday in May, 1830.

Sec. 7. Be it enacted, That the "Medical Society of Tennessee," so soon as it has met and organized, shall proceed to elect seven persons, who reside in Middle Tennessee, not more than two of whom reside in the same county, who shall constitute a board of "Censors for Middle Tennessee," and also, in like manner, elect a board of "Censors for East Tennessee and the Western District."

Sec. 8. Be it enacted, That the persons thus elected to constitute said Board of Censors, shall hold their appointment for the term of one year from the time of their election, and until others shall have been elected to supply their places; they shall meet at such times and places as they may agree upon, at least twice in each year, and when so convened, they shall proceed under such regulations as shall be adopted by the society, to examine any persons who may present themselves for such examination, touching their skill in the practice of medicine and surgery; and if, on such examination the Board of Censors shall deem such candidate sufficiently skilled in the science and practice of medicine and surgery, they shall grant to such candidate a license to practice the same in the State of Tennessee.

Sec. 9. Be it enacted, That no qualification shall be deemed necessary to entitle a candidate to examination, except that he shall be twenty-one years of age, and of good moral character.

Sec. 10. Be it enacted, That if either of the Boards of Censors shall obstinately refuse to examine any candidate having the above qualifications, each member who shall be present at the time of such refusal, and shall concur therein, shall be fined in a sum not exceeding five hundred dollars, to be sued for and recovered by such person or persons so refused, in any court of law in this State, for his own use and benefit.

Sec. 11. Be it enacted, That the Medical Society of Tennessee shall have power,

at any regular meeting, to levy such contributions on its members as shall be thought necessary to effect any of the purposes of its establishment, and shall have power and authority to collect the same in any court of law in this State.

Sec. 12. Be it enacted, That any one of the censors appointed under the provisions of this Act shall have power and authority to grant a temporary license to any person or persons, to practice medicine or surgery, until a regular meeting of said Board of Censors, after which time the said temporary license shall be void.

Sec. 13. Be it enacted, That said corporation shall, at all times, be subject to such rules, regulations and restrictions, as may be thought necessary, and imposed by the General Assembly of this State.

Passed January 9, 1830.

EPHRIAM H. FOSTER,

Speaker of the House of Representatives.

JOEL WALKER,

Speaker of the Senate.

BY-LAWS OF THE MEDICAL SOCIETY OF TENNESSEE.

Article 1. The society shall convene annually on the first Monday in May, at Nashville.

Art. 2. The officers shall consist of a President, Vice-President, a Recording Secretary, Corresponding Secretary, and a Treasurer.

Art. 3. Twenty-five members shall constitute a quorum to transact business.

Art. 4. The officers shall be chosen by ballot, and continue in office for the term of two years, and in case of a tie, the presiding officer shall give the casting vote, and the majority shall elect.

Art. 5. The President shall preside at all meetings, preserve order, and regulate the debates, state and put questions, agreeably to the sense and intention of the members; he shall have power to fine any member for disorderly conduct, in a sum not exceeding five dollars, for each offense; he may, with the concurrence of the Vice-President, call a general meeting of the members at any time, interven-

ing the periods fixed for the established meetings, whenever he may think that the interests of the society shall require a special meeting, of which one month's notice shall be given in some one of the newspapers of Knoxville, Nashville and Jackson.

Art. 6. In the absence of the President his duties shall devolve on the Vice-President, and if neither of them be present, a presiding officer pro tem. shall be appointed, who shall perform the duties of a President.

Art. 7. It shall be the duty of the Recording Secretary to attend each meeting of the society, call over the names of the members, and take down the minutes, which shall be read at the next meeting; he shall keep a list of the members admitted, also a list of the names and residences of all those persons who shall have received a license from the Board of Censors.

Art. 8. It shall be the duty of the Corresponding Secretary to write and answer all letters on behalf of the society, to manage all matters of correspondence, and to make a faithful record of such communications as this society may think worthy of being preserved.

Art. 9. The Treasurer shall receive all donations and collect all the contributions arising from such laws and regulations as the society shall, from time to time, make; he shall likewise keep all the moneys and securities belonging to the society and shall pay all orders signed by the President, Vice-President or presiding officer for the time being, which orders shall be his vouchers for his expenditures.

ADMISSION OF MEMBERS.

Art. 10. Any medical gentleman who shall be proposed as a member of this society may be admitted by the vote of two-thirds of the members present. On admission he shall sign the Constitution and By-Laws, and pay into the hands of the Treasurer such sums as may annually be paid by the members of the society.

Art. 11. No person residing within the

limits of the State shall be admitted as an honorary member, but any medical gentleman residing without the limits of the State, having been proposed and satisfactory reasons given why he should be admitted, may be elected by the vote of two-thirds of the members present.

CENSORS.

Art. 12. The Medical Board of Censors shall be chosen by ballot.

Art. 13. It shall be the duty of each of the Board of Censors to subject the candidates for licenses to an examination on the following branches of the profession, viz: Anatomy, Physiology, Pathology, Chemistry, Materia Medica, the Practice of Medicine, Surgery and Midwifery—except when the candidate presents such testimonials and qualifications as, in the judgment of the board, may preclude the necessity of examination.

Art. 14. Not less than five Censors shall constitute a quorum of either board. If five only are present, one vote may reject a candidate; if more are present, two negative votes are required to reject.

Art. 15. The Dean of each Board of Censors shall keep a record of its proceedings, and from time to time transmit the same, with the fees by him received, to the Recording Secretary.

Art. 16. The licentiate shall be furnished by the Censors with a license, printed on parchment, signed by themselves, the President and the Recording Secretary, and stamped with the seal of the society, after the following manner:

"We, the subscribers, Censors of the Tennessee Medical Society, duly appointed and authorized, have examined A. B., of C——, in the County of D——, a candidate for the practice of physic and surgery, and having found him qualified, do approve and license him as a practitioner in medicine, agreeably to the law in that case made and provided."

Art. 17. The President shall have authority to fill up any and every vacancy that may occur between the regular meetings of the society, by the concurrence of

the members of the Board in which such vacancy or vacancies may occur.

Art. 18. The President or presiding officer shall, at each annual meeting, appoint an Orator, whose duty it shall be to deliver a suitable address at the next annual meeting, on some subject appertaining to the science of medicine, natural history, or botany, under a penalty of twenty-five dollars.

Art. 19. On motion, at any regular meeting, a member may be expelled by a vote of two-thirds of the members present, previous notice, with specifications of the charge having been given him by his accuser of accusers, three months before the meeting at which such motion shall be made; provided, nevertheless, that when any charge shall be made by any one member of the society against another, the accused shall be at liberty to call upon any five members of said society, most convenient to the parties, who shall, on reasonable notice, examine into said charge and if deemed of sufficient importance, shall report the same to the next meeting of the society, or otherwise finally dispose of the same in such manner as they deem just and proper.

Art. 20. The form of oath administered by the presiding officer of the society, or any Judge of the State, shall be in the following words:

"I, A. B., of the County of C———, and State of Tennessee, do hereby solemnly affirm that I will faithfully, truly and impartially perform the duties assigned me as prescribed by the Act of the Legislature and the By-Laws of the society, to the best of my knowledge and ability."

Art. 21. No one of the foregoing By-Laws shall be altered or amended without the concurrence of two-thirds of the members present.

To the Editor of the Tennessee State Medical Journal, Nashville, Tenn.

Dear Mr. Editor: In the November issue of the Journal was published a let-

ter written by Dr. C. P. Fox, of Greeneville, entitled "Things Worth While."

The object that the author probably had in mind when writing the letter was to emphasize the fact that the initial session of the meeting was opened without asking through the proper channel Divine guidance in our deliberations.

As I was President of the Tennessee State Medical Association, and as I was on hand on the occasion of the opening, and having called the meeting to order, the inference is that the omission was probably designed upon my part.

I disclaim all responsibility for the absence of a minister, and, not being accustomed to praying in public, there was nothing for me to do but to call the meeting to order for the purpose of transacting the business of the Association.

The President was never consulted in regard to the order of business to be followed for the Nashville meeting. The Committee on Arrangements alone had to do with the plan of action. "Be not the first by whom the new is tried, nor yet the last to lay the old aside," is not a bad slogan for the non-research worker, the plain man. But it is my opinion that the omission to which the doctor directs our attention was not a premeditated one—merely an unintentional oversight. Personally, I regretted it at the time, and still think it was an unfortunate omission. No man ever existed long in the struggle, whose desire to serve continues active without making a mistake, at least of the head. If our heart is right but little, if any, real harm results from our activities, compared with the good we do. The omission is a mere bagatelle.

Dr. Fox could be informed as to the whys and wherefores concerning my failure to have our meeting opened with prayer by addressing the chairman of the then Committee of Arrangements, and I am sure that it will be of immense satisfaction to him to ascertain the facts. In the meantime I am glad that I am who I am, and shall forever be proud of the honor conferred upon me by the Fellows

of the Tennessee State Medical Association when they elected me as President of the Band of Professional Brethren so noble, so high-minded and useful as I believe the members of the Tennessee State Medical Association to be.

"The sweetest corial one receives at last is the consciousness of good deeds past."

The writer has at all times been, and is now, ready to confess that his score has never been one hundred per cent, but such as the record is, it is his, and he is willing to assume the full responsibility for all actions committed by him, recognizing that there is no offense toward God or man.

FRANK D. SMYTHE.

BOOKS RECEIVED

THE RELATIVE POSITION OF REST OF THE EYES AND THE PROLONGED OCCLUSION TEST. By F. W. Marlow, M. D., M. R. C. S. Esq., F. A. C. S. Professor of Ophthalmology in the College of Medicine, Syracuse University; Member of the American Ophthalmological Society and of the Ophthalmological Society of the United Kingdom; Fellow of the Royal Society of Medicine. Cloth, 94 pages. F. A. Davis & Company, Philadelphia. Price, \$2.50 net.

The author takes the position that the reason so many ophthalmologists fail to get satisfactory results in their efforts to correct muscular imbalances is that the ordinary methods used for diagnosis do not reveal the true conditions. He compares the ordinary methods of testing the external muscles to the methods of determining the refraction without a mydriatic; and he compares his occlusion test to the method of refracting without a mydriatic. In other words, as the muscles of accommodation must be put in a state of rest before the refraction can be easily and accurately determined, so the external muscles must be put in a state of rest before their balance or imbalance can be accurately determined. The occlusion test is the only one that will do this. The prolonged test often requires a week or more. If you do not attach much importance to the external muscles, read this book. If you do, read it. You will be entertained and edified.

E. L. R.

OCULAR THERAPEUTICS. By Dr. Ernest Franke, A. O. Professor of Ophthalmology and Chief of the Second Eye Clinic at the University of Hamburg, Translated by Clarence Loeb, A. M., M. D., Oculist to the Michael Reese Hospital and Head of the Department of Ophthalmology of the Michael Reese Dispensary, Ceiago, Ill. C. V. Mosby Company, St. Louis, Mo. Price, \$3.50.

In the author's preface he says the book "is an attempt to give in a few words our present knowledge of the treatment of the disease of the eye," no optical or surgical treatment is given. First under general treatment he gives an alphabetical list of drugs that are used internally. Then under the subject of local treatment he gives such remedies as may be applied directly to the eye. While the work is brief, having only 171 pages, it is a very valuable book of reference.

E. L. R.

EYE, EAR, NOSE AND THROAT MANUAL FOR NURSES. By Roy H. Parkinson, M. D., Visiting Oculist and Aurist to Dr. Joseph's Hospital, San Francisco, Cal. C. V. Mosby Company, publishers, 509 North Grand Boulevard, St. Louis, Mo. Price, \$2.25.

In this volume the author has presented a book of 200 pages gotten up in the best mechanical style. It gives all the common diseases of the organs covered—both medical and surgical—and tells what part a nurse should have in the care of the same. In the surgical diseases it gives the instruments that are generally used—with good cuts of the same—as well as instructions concerning the nurse's duty in the operating room. It also has a chapter on Public Health Nursing. The book will make a valuable addition to any nurse's library.

E. L. R.

THE MEDICAL CLINICS OF NORTH AMERICA (issued serially, one number every other month). Vol. LX, No. 3, New York Number, November, 1925. Octavo of 317 pages, with 72 illustrations. Per clinic year, paper, \$12.00; cloth, \$16.00 net. Philadelphia: W. B. Saunders Co.

The New York volume measures up to the standard of excellence of the previous numbers. Dr. W. A. Bastedo reviews the current views on digitalis dosage, and reports a number of cases of hypersusceptibility to the drug. Dr. R. L. Levy stresses the importance of quinidin as a prophylactic in cases of paroxysmal tachycardia. There are a number of other articles on timely subjects of interest to the internist.

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DEVOTED TO THE INTERESTS OF THE MEDICAL PROFESSION OF TENNESSEE

ISSUED MONTHLY, under Direction of the Trustees

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TYPHOID INOCULATION*

ITS EFFECT ON TYPHOID RATE IN THE CIVIL POPULATION

FRANK L. ROBERTS, M.A., M.D., Trenton, Tenn.

State Field Director, Tennessee State Department of Health

IMMUNITY to typhoid can be secured in three ways—by contracting the disease, by injection of killed typhoid bacilli into the subcutaneous tissues, and by repeated small doses of infection. The first method is dangerous, expensive, useless and irrational. The second method is safe, cheap, effective and rational; osteopaths, chiropractors, Christian Scientists and other quasi-scientists to the contrary notwithstanding. The third method is too unreliable to be depended upon if one is really seeking to avoid typhoid.

Since 1904 many papers have appeared on the subject of typhoid inoculation. In every instance, as far as I can learn, these papers are limited to studies on army groups and institutional groups. A careful search of the literature fails to show any papers dealing with large groups of the civilian population. Hence this study was undertaken in Gibson County, where we have been able to reduce the typhoid rate by more than sixty per cent in the last three years solely

through the inoculation of twenty-five per cent of the population against typhoid fever.

Typhoid inoculation was introduced by Pfeiffer and Kolle in 1896 and two years later Wright inoculated 4,000 British soldiers in India, and in 1900 he and Leishman inoculated 100,000 British soldiers engaged in the Boer War. The Germans also inoculated their soldiers in the West African campaign of 1904. Richardson introduced the practice in this country and it was most successfully employed by Major Russell (1) on our own troops during the World War.

The first results did not come up to expectations and the practice for some time was out of favor with governments and medical men. In the light of our present knowledge the reasons for the poor results are easily explained. The first vaccine, notably that used in the South African campaign, was inert, because it was overheated in its preparation. Vaccines made today are potent. Another reason for the early unpopularity of the procedure was due to an unfortunate and unfounded statement by

*Read before the Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

Wright that there was a negative phase in the immunity developed. By this "negative phase" Wright meant that there was an increased susceptibility to typhoid for a short while following the inoculation, hence its use might be fraught with danger during an epidemic. A searching inquiry into Wright's paper fails to show even a shred of convincing evidence for such a declaration and subsequent experience has shown that there is no "negative phase." If ever a person should be inoculated for typhoid it is during an epidemic, and it is at such times that our clinics are remarkable for the number of "anti-vaccinationists" attending them. When one sees three out of five of his friends die of typhoid it is extremely difficult to stand by the theories of faddists and one hastens to be inoculated. If a person must be converted into statistics he much prefers to be tabulated with the living.

Let us outline the position taken by those opposing inoculation and then we can see how facts controvert the fanciful theories of cultists and faddists. How do the "antis" explain the fact that during the Spanish-American skirmish 243 men were killed in action or died of wounds, while 1,580 men died of typhoid—there being one case of typhoid for every seventy-one men enlisted, whereas in the World War there was only one case of typhoid for every 20,000 men? Again one sees several people sicken and die of typhoid—all uninoculated and in the same community not a single inoculated person sickens or dies. How do the "antis" explain this? There are only two reasons that they can put forth with any weight. A few may advance a third explanation. The first reason is that better sanitation accounts for the freedom of the troops from typhoid in the World War and in the civilian population that only people of the better classes, i. e., those living under good sanitation are inoculated, whereas typhoid is largely limited to the poorer classes—those living in an insanitary environment. As far as the

army is concerned every one must admit that better sanitation aided to a great extent in cutting down the number of typhoid cases. But how can excellent camp sanitation aid a soldier out of camp on leave, eating at cheap cafes, from street stands and "hot dog" wagons? How will the most excellent camp environment prevent him from swallowing a dose of typhoid germs while he is out of camp. How will camp sanitation prevent a carrier from infecting a latrine? It is certain that sanitation alone cannot account for the low typhoid rate in the American army. Aside from this, it is obvious that we can never hope to secure as excellent sanitation in a large civilian community as obtains in the army camp. As regards the argument that only people of the better classes are inoculated we know that in this country at least that more poor people are inoculated than the well-to-do, a fact that disposes of the factor of social position in decreasing the typhoid rate.* The "antis" will have hard sledding to make sanitation alone account for the immunity to typhoid enjoyed by the inoculated.

The second argument often advanced by opponents of inoculation is that chance will operate to a great extent in aiding a person to avoid typhoid. They argue that even in heavily infested endemic areas that only five out of every thousand people contract the disease and that therefore the chances are against a person acquiring typhoid. More of this later.

The above arguments are used by the more intelligent (?) of the opponents. The downright imbeciles resort to the third argument, "They wouldn't have got typhoid no how." Translating this into more exact and scientific language, "Those inoculated escaped typhoid because they have a natural immunity to the disease." We may dismiss this argument as not proved. There is absolutely no proof that any person enjoys a natural immunity to the *bacillus typhosus*, and certainly natural immunity cannot account for the results obtained when inoculation is

practiced on a large scale.

I propose to prove that typhoid inoculation will protect an individual against typhoid fever and that the inoculation of a large number of the members of a community will decrease the typhoid rate in that community and will benefit the participants financially.

That the individual is protected against typhoid by inoculation is abundantly proven by the experience of medical men throughout the world. Archard (2) reports an epidemic in France involving fourteen families comprising 121 individuals. Seven families accepted inoculation and seven refused. Not one person in the first group of eighty contracted typhoid while in the second group of forty-one people, twenty-nine fell ill of typhoid and 6.6 per cent of them died.

Chauffard (3), in the *Bulletin de l'Academie de Medecine*, gives the following tables which are of interest:

	--Men--		--Women--	
	1912-13	1918-20	1912-13	1918-20
Typhoid cases -----	11	10	12	23
Average age in years--	24	17.5	27	27
Less than 20 years old	27.5%	90%	19%	24.5%
More than 20 years old	72.5%	10%	81%	75.4%

In these tables there are several outstanding features. In 1912 and 1913 we notice that 72.5 per cent of the men affected in the village were over twenty years of age and eighty-one per cent of the women were over twenty. In 1918 and 1920 we note that only ten per cent of the men were over twenty years, whereas the percentage of women over twenty remained approximately the same. According to the author only one factor involved in the transmission of typhoid was changed in the district under discussion. This factor was the inoculation of the men who had been in the army. In other words the men over twenty years of age had served in the army and had received the inoculation, and as a result of this only 0.03 per cent of the cases in 1918 and 1920 occurred in mature men while in 1912 and 1913 fifteen per cent of the cases were in men over twenty years of age—a difference of 495 per cent.

Sergeant (4) writing in the same periodical reports that in the Charite Hospital

in Paris there were nine cases of typhoid women and eighteen in men during the two years from 1911 to 1913, whereas in 1918 and 1920 there were thirteen women ill with typhoid and only one man who was past twenty years of age.

In 1912 Hatchel and Stoner (5) inoculated 2,044 people in Maryland. These people were employed in hospitals and public institutions and many of them were constantly exposed to typhoid. In a period of three years following these inoculations not one of these 2,044 individuals had contracted typhoid.

Two examples will suffice from my own experience. During July 1924 this department held four clinics in a certain rural community of this county. One family of seven people refused inoculation. In September five of this family were stricken with typhoid and two of them developed typhoid psychoses. This was the only family in the vicinity that had refused immunization and they represented the only cases of typhoid in that community for 1924. This is hard to explain on the basis of chance and still harder to explain on the basis of poor sanitation because in this case the sanitation of the community was alike for all families concerned.

In another urban community there were five cases of typhoid with two deaths in one block. None of these cases had been inoculated and no cases were reported from this town as occurring in people inoculated. Chance may have entered here but sanitation was better in this block than it was in more than eighty per cent of the other localities in the same town.

One could go on indefinitely quoting examples from the medical literature showing the protection afforded individuals through typhoid inoculation. The benefits of course are always more evident during epidemic but we have obtained very satisfactory and striking results in this county where typhoid is endemic.

Referring again to the "chance" argument promulgated by the "anti-vaccinationists," let us glance at Table 2. These opponents state the only five out of a thou-

sand people contract typhoid even when the rate is as high as fifty per 10,000 of population. Since the average rate for Gibson County was 23.3 per 10,000 for the years from 1922 to 1923 inclusive we would expect more than twenty cases of typhoid in the 11,347 individuals inoculated. This assumption is still further warranted by the fact that these 11,347 people form twenty-five per cent of the total population.

As a matter of fact careful investigation has elicited the following facts. Questionnaires were sent to the forty-two doctors of the county, asking them whether or not they had treated any cases of typhoid that had received anti-typhoid vaccination within three years of the time of becoming ill. Of these forty-two doctors forty returned answers. One doctor stated that he had had one case that had received the inoculation two weeks previous to becoming ill and was sick only about twenty days. Undoubtedly this patient had received the infection before the inoculation had been completed and the disease ran a very light course. Another physician stated that he had had one case that had been inoculated. Subsequent investigation showed that this diagnosis had not been confirmed by blood cultures and can therefore in reason be classed as doubtful. The other thirty-eight doctors returned negative answers. The fact that more than 11,000 people—twenty-five per cent of the population—have escaped typhoid absolutely rules out the factors of chance.

What factors other than inoculation might protect a person or a community against typhoid? The answer is improved sanitation and natural immunity. As stated before we can dismiss the latter factor as not proved and is obvious that natural immunity can in no way explain the fact that twenty-five per cent of the population of an entire county escaped typhoid when the rate was more than twenty-three per 10,000 in the other seventy-five per cent.

Improved sanitation however is a valid argument and if present could easily ac-

count for a decreased typhoid rate. The sanitary conditions involved in the spread of typhoid are the same and have been the same for the last three years as they were during the five year period preceding 1922. These sanitary factors are improved methods of sewage disposal, protection from flies, new water supplies, and improved food handling. During the last five years 400 approved sanitary privies have been built in the county, more than 200 of them in one town and the rest for schools. One new sewer system has been constructed and new sewer connections have been limited to the larger towns. There has been no increase in the average sale of window screening and no marked changes in food handling establishments. Practically all the improvements in sanitation have been made in the towns whereas at least eighty per cent of those inoculated were from the rural sections. Changes in sanitation therefore can not account for the protection of these 11,000 inoculated people.

From the facts presented it seems logical to conclude that individuals are protected from typhoid by inoculation. Our next question is whether or not this same protection is given the community. Does the inoculation of a large number of individuals definitely lower the typhoid rate in that community and does this lowering of the typhoid rate benefit the community financially?

Three tables are presented below which give the essential data used in reaching our conclusions regarding the changes in the typhoid rate following wholesale inoculations.

TABLE I. STATE OF TENNESSEE

Year	Population	Typhoid Deaths	No. of Inoculations	Percent Inoculated	Estimated Typhoid rate†
1919	2,322,376*	642	0	0	27.7
1920	2,337,885	434	7,925	0.35	18.5
1921	2,353,194*	605	10,423	0.42	25.7
1922	2,368,503*	495	10,616	0.43	20.9
1923	2,383,812*	513	9,186	0.38	21.5

†Cases per 10,000 of population.

TABLE II. GIBSON COUNTY

Year	Population	Estimated Typhoid Rate	No. of Inoculations
1917	42,860*	46.7	----
1918	43,085*	44.2	----
1919	43,210*	41.6	----
1920	43,388	23.0	210
1921	43,563*	34.2	----
1922	43,738*	27.3	2,658
1923	43,913*	27.5	2,113
1924	44,088*	15.1	6,576

*Estimated.

TABLE III. CARROLL COUNTY

Year	Population	Estimated Typhoid Rate
1917	24,100*	66.3
1918	24,200*	44.5
1919	24,322*	28.7
1920	24,361	32.8
1921	24,400	52.4
1922	24,439*	57.4
1923	24,468*	32.8
1924	24,500*	32.6
Average rate for 1922, 1923 and 1924		40.9

*Estimated.

Before discussing the statistical evidence let us review the conditions that must be met in order that our conclusions may be valid. We must have a community that is composed principally of a rural population as this will exclude to a large extent the factor of sanitation. The population must not fluctuate beyond narrow limits as regards number. A representative proportion of the population must have received typhoid inoculation. Finally this community must be compared with a community where all typhoid factors except the inoculation are the same. This county meets the requirements. It is essentially a rural county with an estimated population of 44,088 in 1924. The fact that the population in 1910 was 41,630 and in 1920 was 43,380 shows that total population does not vary to any extent as regards number; 11,347 people in the county have been inoculated against typhoid which gives an adequate sample inasmuch as these individuals form better than twenty-five per cent of the total population. For purposes of comparison we have an adjoining county, Carroll, which has the same soil, climate, economic and sanitary conditions as obtain in this county. There have been no wholesale typhoid inoculations in Carroll County.

Glancing at Table 1, two facts are immediately apparent. The percentage of inoculations for the whole state as very small and could not have affected the typhoid rate. But when we examine Table 2, we see a different picture. In the five years period from 1917 to 1921 inclusive we see that the average typhoid rate per 10,000 of population was 37.9. Early in the summer of 1922 typhoid inoculations were begun on a large scale. In that year the rate was 27.5 and by the end of 1923 more

than ten per cent of the population had been inoculated and in 1924 the rate had dropped to 15.1 per 10,000. The average rate for the five years period preceding the inoculation work was as stated, 37.9 and the average rate for the period following was 23.1—a difference of 14.8 per 10,000 or more than sixty per cent.

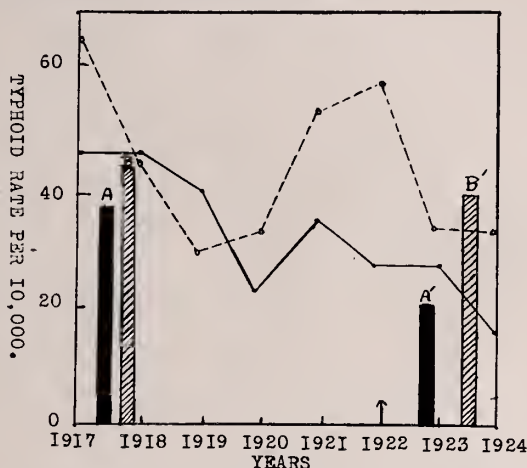


Fig. 1. Graph representnig the typhoid rate in Gibson County and in Carroll County by years for the period from 1917 to 1924, inclusive. The dotted line represents the rate for Carroll County and the solid line the rate for Gibson County. A, A', B and B' are histograms showing the average rates for the period from 1917 to 1921, inclusive, and the average rate for the period 1922 to 1924, inclusive. A, average rate for Gibson County prior to 1922. B, average rate for Carroll County prior to 1922. A', average rate for Gibson for the period after 1922, and B', average rate for Carroll for the period after 1922. Arrow indicates year in which typhoid inoculations were begun on a large scale in Gibson County.

Looking at it from another angle we may assume that those inoculated in 1922 received the inoculation too late to be protected in that year and the same may be assumed for those inoculated in 1923. That is, the 6.0 per cent inoculated in 1922 were protected in 1923 and the 4.8 per cent inoculated in 1923 were protected in 1924. On this basis we would include 1922 with the preceding five years and this would give the rate for that period as thirty-six, and the rate for 1923 and 1924 would be 21.3—a difference of 14.8. In short, no matter how we look at it there has been a decided drop in the typhoid rate of this county since the carrying out of typhoid inoculations on a large scale.

In order to further demonstrate the

value of this work let us compare the rate in this county and that in Carroll County. Table 3 shows the typhoid rate in Carroll County. This table shows that the average rate for the five-year period prior to 1922 in that county was 44.9 while in Gibson County the rate for the same period was 37.9. In the three years period following 1922 the rate in Carroll County dropped to 40.9, a decrease of only 4.0, whereas in the same period the rate in Gibson County dropped from 37.9 to 23.1, a difference of 14.8. These tables are represented graphically in Figure 1 which shows the much more rapid drop in Gibson County than in Carroll County.

When the typhoid rate is plotted against the per cent of inoculated individuals an interesting curve results. A glance at Figure 2 will show that the fall in typhoid rate is in almost direct proportion to the number of typhoid inoculations. The curve approximates a straight line but has an asymptote in the abscissa. Were it a straight line we would expect a zero typhoid rate which is practically impossible. In short the curve constantly approaches a zero rate but does not reach zero except in infinity.

This curve shows very clearly the marked reduction in typhoid rate when a large percentage of the population is rendered im-

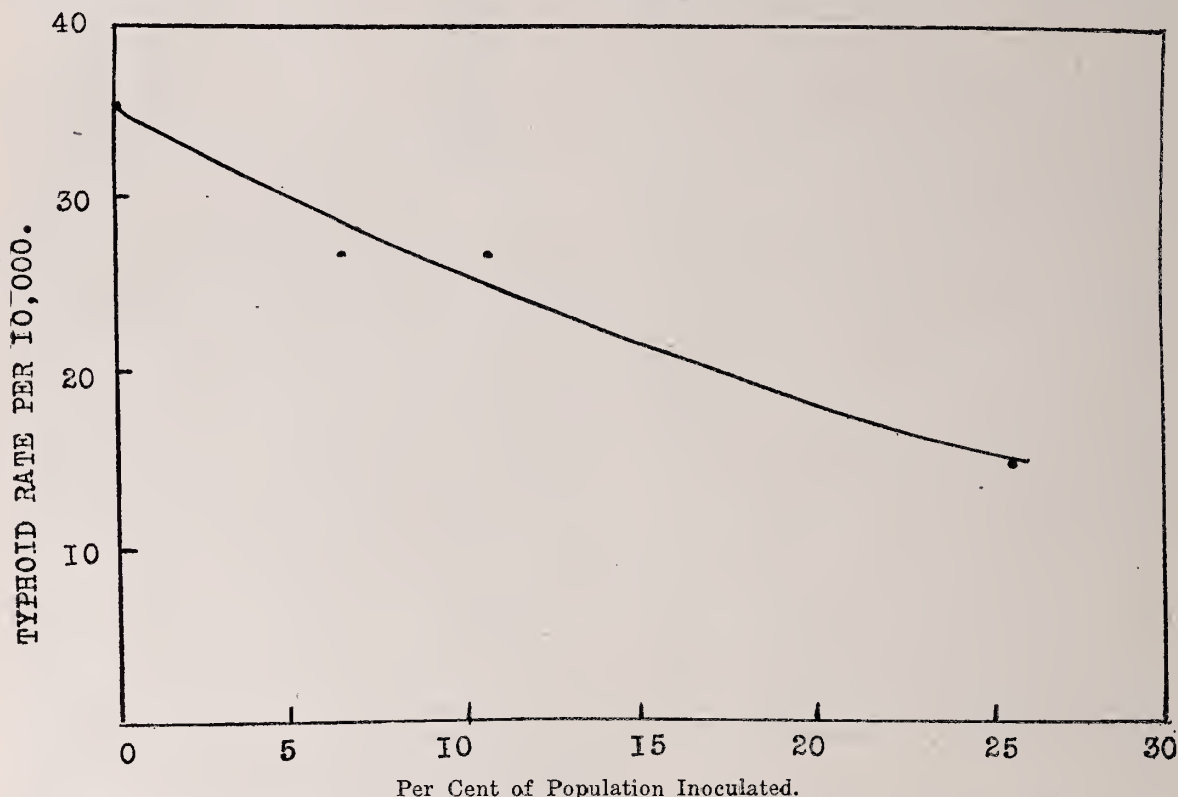


Fig. 2. Graph showing the relation between the typhoid rate and the per cent of population inoculated. The typhoid rate is represented on the ordinate and the per cent of population inoculated on the abscissa.

mune to typhoid.

Further than this there is a distinct economic value resulting from the work. It has been estimated that a case of typhoid costs approximately \$140.00. In this county the number of cases reported has decreased from an average of 164 per year to an average of 115 per year for the three years after 1921. This means a saving of

49 cases a year for three years or a total of 147 cases. This represents a saving of \$20,580.00. Even if we exclude 1922 from the second group and include it in the first we have saved 142 cases or \$19,880.00. Of course these are estimated averages, but I am convinced that if it were possible to find the exact difference in the two periods that the total amount saved would far ex-

ceed these figures, bearing mind that this is an agricultural community and that many times a case of typhoid means the loss of a farmer's entire crop.

In conclusion we can state that experience in the civil population has shown that typhoid inoculation will protect the individual against typhoid fever and that when inoculation is carried out on a large scale that it will materially reduce the typhoid rate and will confer marked economic benefit upon the community inoculated.

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DISCUSSION

DR. E. L. BISHOP, Nashville: The efficacy of typhoid vaccination has been largely taken for granted, but its value in the civil population of an area with a high endemic index has not, so far as I know, been proven by statistically stable figures. I recently requested the Rockefeller Foundation to prepare me a bibliography on this subject, and was much surprised to find that very few figures are available. I also got in touch with one of the best epidemiologists in the country, and he confirmed this lack of figures regarding the value of typhoid vaccination in the civil population. It must be an established fact that preventive measures are of value before health departments supported by public funds are justified in making very considerable expenditures, and we have

therefore attempted to prove the value of this work in our civil population. Our justification in beginning the work is found in the two facts that (1) typhoid vaccination is known to be of value from general information, and (2) if a considerable percentage of a population can be made immune a decrease in incidence will occur usually larger than the percentage of the population immunized, on account of the fact that so many additional barriers are placed in the way of the spread of the disease. The latter fact is, of course, an epidemiological principle that is well known.

The department has had other experiences indicating the value of typhoid vaccination as a community protective measure, one of which was found in a small water-borne epidemic at Kingston. Kingston is a town of approximately five hundred inhabitants, in which a small water-borne epidemic of typhoid fever occurred, a total of nine cases having been reported. The health officer reported that ninety-five per cent of the population had received typhoid vaccination and that no case of typhoid occurred in an individual who had had this protection; therefore, one hundred per cent of the cases occurred in five per cent of the population, which would appear rather definite proof of the value of this method of protection.

Another experience was in a county where we secured approximately sixty per cent reduction in the deaths from typhoid over a period of two years. The work was discontinued, and immediately the typhoid rate began to rise. When work was resumed, the typhoid rate again began to decline.

We are trying to accumulate specific figures and hope to be able to prove from these figures that typhoid vaccination will control typhoid in the civil population. It is, of course, the beginning of prevention, and sanitation must furnish permanent control.

DR. J. C. WILSON, Rockwood: I wish to endorse the work of the Tennessee State Board of Health. In the first place, a death from typhoid fever is a crime. Somebody is responsible for such a death. It may be one of us, but there is a responsibility that should be fixed on somebody. Typhoid is a preventable disease, and why do we not eradicate it from our State? We have done great work in other things—yellow fever, smallpox, and all those things are considered a disgrace to any community, and typhoid fever is just as much a disgrace as any other thing we have. It is due to an infected water supply in many instances, and the little innocent child is subjected to it, for he has no idea of the risk he is taking. This brings distress and suffering not

only to the patient, but it acts as a focus of infection to a large area surrounding this one case of typhoid fever. I think we would be justified in prosecuting any man who is responsible for such an occurrence.

I am from Roane County, and I think we have one of the best health units in the State. Every man is loyal and on the job. If a case of typhoid fever develops, they get right there and work it out and try to get to the source of the infection. They isolate everything and try to stop the disease, and they have succeeded. Years ago, before we had this health unit, it was a common thing to see a hearse going down the street, frequently as the result of typhoid fever, and many of our best citizens are in the graveyards as the result of somebody's neglect.

Outside of the little epidemic that developed in Kingston last summer, there is little typhoid fever in the district. It is a rarity. We do not see a case once a year. In my neighboring county of Rhea, where I do a good deal, they have it all the time. Winter and summer there is typhoid. They are not protected as we are, and typhoid fever is just as common there as measles and whooping cough.

I hope every man present will begin a campaign to get a health unit to work in his county.

DR. A. L. RULE, Knoxville: The fight against typhoid is purely an educational fight. It is up to the medical profession to promulgate plans, and we have the remedy. The typhoid fever of today is just like it was twenty-five years ago—real mountain typhoid we still have in Knoxville. Our splendid board of health in rounding up this malady was able to trace it to one source. I remember one instance we had two cases develop in children in the same community. It was very difficult to trace it, but it happened that both families secured their milk supply from the same dairy. The board of health took this up, and it took four weeks to find the source of the trouble; but when they did find it, they found it was a typhoid carrier who was milking these cows. When they discharged the carrier, the trouble ceased. We must find the source and we must educate the people to be inoculated, but this is one of the hardest things we have to do—to get these people to submit to inoculation. Many intelligent people have a horror of submitting to anything of the kind and will avoid it by every means possible.

The day of preventative medicine is here. The medical profession is climbing on high peaks when we attempt to carry out this work. I wish to commend the Board of Health of Tennessee, and I assure you that anything I can do to eradicate this disease I shall be pleased to do. I had a little experience last year that came very close to

me. I inoculated my entire family except my six-year-old baby. It seemed to me there was no use inoculating him, but within three weeks from the time I inoculated the rest of the family my baby went down with typhoid fever. Where he got it we do not know.

DR. WILLIAM LITTERER, Nashville: We know of Dr. Roberts' excellent work, for we have sent many thousands of doses of typhoid vaccine out to him. The laboratory division of the Department of Public Health manufactures and sends out typhoid vaccine to all the different health units, as well as to many public and penal institutions throughout the State. The Department of Public Health is striving in every way at their command to establish more health units, for this is the only way to get the rural population to submit to vaccination. It is remarkable to see how many persons that become interested in vaccination simply by the installation of the health unit. In looking over our reports for the past three years, in which we furnish typhoid vaccine to the various units, it is surprising to note how very few have contracted the disease after having had the inoculation. We believe our success in this particular is due to the fact that all typhoid vaccine is never over four weeks old, and also our vaccines contain five strains instead of the customary triple strain typhoid vaccine. We not only come across Para A and Para B typhoid, but we encounter typhoid in which the serum of patients produce no agglutination. This type is quite prevalent in and around Lebanon (Wilson County) and Gallatin (Sumner County). The micro-organisms isolated from these cases are almost identical to the *bacillus typhosus*, yet they fail to agglutinate with immune serum. These micro-organisms will, however, agglutinate with the serum of patients from whom they were isolated. When we make the Widal test we usually run the straight (1) B Typhosus, (2) the aPra A, (3) the Para B; and if all of these are negative, we use the several other rarer strains before stating that the blood shows a negative Widal.

DR. J. A. WITHERSPOON, Nashville: I think we all understand the cause of typhoid, the method of propagation and the method of entrance into the human body.

I rise to say a few words in regard to the neglect our State has shown to the Public Health Service. It is time that we, as the great health protectors of the people, should rise up and let the world know that it is not the fault of the medical profession that these scourges are not wiped out. We have a glorious record in wiping out all the scourges of the past, and yet typhoid fever, a home disease, is one of the great death-dealing diseases of the country. If there is any disease in the world that should be fought it is this death-

dealing disease that is striking at the very heart of the world. Until this term of the Legislature, when we fought so hard to get an increase in our health appropriation, we were paying only three cents per capita. Pennsylvania was paying sixty-seven cents per capita. Why should we not fight for this health service? We should go before the Legislature and beg and plead for appropriations to get all-time health men. That is what we need. The doctor should be prosecuted when he does not report his cases, but the great problems of preventive medicine must be handled by trained men. It is a science that requires study and preparation, and we should have men graduated in it, and we should sustain them financially and in every other way.

DR. F. L. ROBERTS, Tennessee State Board of Health, Nashville (closing): I do not wish any one to understand that I recommend typhoid inoculation as the only means of combating typhoid fever. In our county we are building sanitary privies, inspecting our dairies and using every means we can to combat typhoid. I use this method because until now we have not had the sanitary privies, and this was an excellent opportunity to ascertain the effects of inoculation. We have encountered no difficulty in getting the people in our county to take the inoculation. We have used two and a half gallons of Dr. Litterer's vaccine in doing it, which means a considerable number of shots.

I thank you all for your interest in the question.

EARLY TREATMENT OF EYE INJURIES*

W. W. WILKERSON, M.D., Nashville

THIS essay is limited to the early treatment of eye injuries, as the later treatment of such conditions consists of the care of complications, which is in itself a complete and separate subject. Nothing new is expounded in this paper: it is a compilation of the opinions of the best authors summarized and given to you in a usable form.

INJURIES OF THE LIDS.

In cases of cuts through the lids the sutures should be very deep and closely arranged. A tight bandage should be applied, for at best the sutures are prone to pull loose. Some prevent this pulling in vertical wounds by a canthotomy. Insect bites and bee stings of the lids are treated with most efficacy by the application of cold compresses.

INJURIES OF THE CONJUNCTIVA.

Foreign bodies of the conjunctiva should be carefully removed, and the conjunctival sac freely irrigated with a mildly antiseptic solution. Small wounds are of little importance, but the larger wounds of the conjunctiva require suturing. Corrosions produced by acids should be treated with free irrigations of carbonate of soda solution, or ordinary cooking soda in solution; alkali burns should be treated with irrigations of milk; lime burns should be treated with instillation of o.l into the conjunctival sac. Fuchs has recommended the use of a concentrated sugar solution in these cases. Burns of the conjunctiva require the additional use of some mildly antiseptic ointment and cold compresses. However, let me add that cold compresses should not be applied for more than fifteen minutes at one time for fear of chilling the cornea to a dangerous degree.

INJURIES OF THE CORNEA.

Burns of the cornea should be treated in a similar manner to those of the conjunctiva. In perforated wounds of the cornea in which the iris is protruding, the prolapsed iris should be removed and the remaining edges replaced in the anterior chamber. The size of the injury offers no index as to the prognosis; for if the wound becomes infected it may cause the loss of the eye. The safest plan is to cleanse thoroughly the conjunctival sac, touch the wounds of the cornea with three and one-half per cent tincture of iodine, following this with the repeated use of antiseptic ointments and warm compresses. Attention must be paid to the lacrymal apparatus to prevent infection coming from that source. In all wounds extending through the cornea the patients should be placed in bed. Whenever the iris is involved one should immediately use atropine sulphate—two per cent in adults, being careful to obtain complete dilatation. Cleanliness—first, last, and always—is of greatest importance in these cases.

INJURIES OF THE IRIS.

The treatment of wounds of the iris produced by blunt instruments without perforation of the globe consists of pressure bandages, the application of cold compresses, and rest in bed. In perforated injuries the conjunctival sac must be carefully irrigated. Atropine sulphate should be used when the rent in the iris is located centrally, and pilocarpine muriate when located peripherally. Rest in bed and the application of cold compresses and later warm compresses is of utmost importance. Foreign bodies of the iris should be removed; iron and steel particles by the use of the magnet, if possible. Those foreign bodies which cannot be removed in that manner should be removed by the exclusion of the involved portion of the iris.

*Read before the Middle Tennessee Medical Association, Shelbyville, May 14, 15, 1925.

INJURIES OF THE LENSE.

In cases in which the lense is involved, one must watch for increased tension, and if present to a great extent the lense matter should be removed immediately. If normal intra-ocular tension is present more satisfactory results will be obtained by allowing the external injury to heal completely before doing a cataract extraction. One must remember that either an extra-ocular or an intra-ocular injury may be followed by a traumatic cataract. This renders the prognosis uncertain for several days after any ocular injury occurs.

INJURIES OF THE SCLERA.

In small scleral wounds the conjunctival sac should be freely irrigated and three and one-half per cent iodine applied to the edges of the wound. The conjunctiva should be brought together over this rent with close suturing. The use of cold compresses is of value here also. In the larger wounds, or in cases in which an unremovable foreign body is present in the globe, the eye should be carefully watched, and, if necessary, an enucleation performed to prevent sympathetic ophthalmia and loss of vision in the other eye at some future date. In these cases the patient should be put to bed and the eye bandaged firmly.

Intra-ocular hemorrhages occasionally occur even after slight blows. In such cases complete rest of the patient is essential and the use of his eyes is forbidden. Administration of the iodides apparently aids in the recovery of these cases.

Injuries to the optic nerve respond very little to any treatment.

In wounds of the lids, conjunctiva and cornea, due to the presence of gunpowder, as much as possible of the burned powder should be removed with a fine needle. Hydrogen peroxide is of some value in its removal. An antiseptic ointment should be applied to the affected parts.

In pressure injuries without perforation in the new born, either due to a small pelvis or instrumentation, there is no treatment of special value, other than that described above under each heading.

Cocain, butyn, or holocain, after several instillations, gives sufficient anesthesia for the necessary surgery in the smaller wounds. However, in the larger wounds a general anesthetic is required.

In injuries which penetrate the globe the injection of milk or some foreign protein, intramuscularly, for the purpose of increasing the resistance of the eye to any infection which may occur aids in certain cases. The results of this treatment merit its usage.

Ultra violet rays are sometimes used in injuries of the cornea to increase the blood supply to that part. However, it requires considerable skill to obtain the proper rays and to give the correct dosage.

From the beginning one must watch carefully for complications in all types of injuries. It behooves us in all cases of injury to the eye to cleanse thoroughly the affected parts, render them aseptic if possible, and apply the proper medication and treatment consistently. For by so doing we will avoid the necessity of an enucleation in many cases, and visual acuity will suffer must less.

SOME ATTRIBUTES OF THE HUMAN MIND*

J. W. BARKSDALE, M.D., F.A.C.S., Jackson, Miss.

MR. PRESIDENT and Gentlemen of the Tennessee State Medical Society:

I must beg your indulgence for my departure from what might be considered a legitimate subject to be read before a scientific body; a subject about which little is understood and about which the essayist claims no special knowledge. It is, however, a subject concerning which there has been much speculation and which has engaged the thought and attention of men since the dawn of time. Indeed, in the early history of the human race, and to some extent today, the mind and the soul have been considered as being synonymous and, as man has, in all ages and all countries, been highly imbued with a religious sense, so has this subject claimed much thought at the hands of many investigators.

In the ages long gone, tradition tells us that God walked with man, and this idea seems to have been prevalent with all the races of men. Whether we believe that the Pentateuch was inspired, or whether it was simply a tradition of the Jewish people, it but transposes into another form the legends and myths of other peoples contemporary with them. The Greek had his gods on high Olympus, who took an active and personal interest in the destinies of man, the Roman poured out his supplications to his deities in the belief that his prayers would be answered, the Norwegian, Slav'ic and German mythologies all emphasized the personal relation of God and man, and, whether we believe with them or with the Hebrew idea that God spoke to man in dreams and visions or out of the burning bush, it would seem that through all the bygone ages, and with all

sorts and conditions of men they have held tenaciously to the idea of a personal communion with a supreme being. This is not a theological treatise, nor does dogma or creed or faith have any place here, but it merely embodies to a certain extent my own ideas and is to that extent a preamble and fundamental basis for this paper.

When the great Creator made man and breathed into his nostrils the breath of life, who can say that he did not impart with it some tiny spark of divinity itself, possessing, perhaps, many of the attributes of Deity, yet separated from it by limits impassable and impenetrable.

"Earth could not answer, nor the seas that mourn
In flowing purple of their Lord forlorn,
Nor rolling Heaven, with all its signs
Revealed and hidden by the sleeve of Night and
Morn."

Well might the Psalmist have said, "Wonderful are Thy works, O, Lord!" and, of all the marvels of creation so far as human knowledge takes us, none is so wonderful as the human mind, that sacred precinct, that holy of holies, whereon there pass in panoramic review the great events in the history of the world. Here we visualize the dawn of creation and the evolution of the world from chaos to its present state. The student of paleontology can trace the life history of the world from the minute the lowly trilobite down to its present complex forms. Here are recorded the ancient traditions of mankind, which have been handed down from father to son to be finally recorded in the annals of history when letters unfolded the world of knowledge to his eager search.

The imagination soars and the things of a million years are but as yesterday; a moment we contemplate the creation of all things, visible and yet invisible, yet another moment and we delve far into the future in a futile effort to surmise what the ages

*Special address delivered before the Tennessee State Medical Association, Nashville, April 21-22-23, 1925.

yet to come may bring forth. The mind projects itself from planet to planet and all the great systems of the universe are traversed in the twinkling of an eye. It would seem that time and space are obliterated and that the potentialities of the mind take no cognizance of either in the contemplation of the limitless universe and the things of eternity. Yet even the imagination is stopped in its flights of fancy and the creator of all things has set a limit beyond which it cannot pass. Things finite we can, to some extent, grasp, but the things that belong to infinity are beyond our comprehension. He who would endeavor to let his mind dwell on time without beginning and without end and on worlds beyond worlds through a limitless area soon finds himself in such a maze that reason itself is staggered by the immensity of the problem and its impossibility of solution.

At best the mind is but an object for speculation as, from the very nature of things, any attempt at investigating even what it is and what changes are involved in the processes of thought is stopped at the very threshold. The brain is but the temporary abiding place of the mind, and during the span of human life is limited in the acquisition of knowledge only by the assiduity with which one applies himself. It is the treasure house where are stored those golden facts which training can almost instantly marshal and array in logical sequence. Perhaps each individual cell is capable of storing within its recesses a certain number of impressions which are practically always at our command. How devious and multifarious must be the paths through which these thoughts must pass! Strange, is it not, that memory will elicit still other associated ideas and that out of the long forgotten there still comes to the mind recollections of things so intangible and so distant as to seem like a dream and yet something that has had its existence in reality. Again we live through scenes which, while never experienced before, have all the earmarks of familiarity, and as if in some gone times the same

stage had been set and we were actors thereon. What subtle influence is there that links us up with an existence not our own? Is it but a trick of the mind or has some prenatal influence left its impress to be evoked under certain circumstances? Even as atavistic traits will manifest themselves after generations have passed why should not there be recrudescences of thoughts which in some strange way touch a responsive chord in succeeding generations? Where is the central station? and what is the invisible mechanism that guides the current of one's thoughts? By what train of logic can we deduce that one word should follow another as a definite sentence to express a definite thought? What reactions are there that call forth the emotions? Is the mind an integral part of man or does man simply furnish it as an abode for its manifestations? Time will never answer these questions, for when they shall have been answered man will have ceased to be man but will have evolved into some supernatural being.

It is impossible to catalogue all of the attributes of the human mind, for they are so various as to embrace nearly every trait and characteristic of human life. Some merge almost insensibly into others, some are the antitheses of others as love and hate, generosity and selfishness, and so on practically without limit. Some, as love, have played on the heart strings of man since his creation. It has run the gamut of all his various passions and has touched the vibrant chords of his soul so as to make it responsive to practically every phase of human emotion. Ambition has taken him by the hand and led him into the seats of the mighty or again it has carried him to the crest of some lonely Nebo, there to catch but a fleeting glimpse of the goal of his hopes and desires only to see them vanish forever.

Humility, that seeks not to exalt itself, but yoked with patience and perseverance accomplishes the bulk of human effort and writes the "Short and simple annals of the poor."

"Let not Ambition mock their useful toil,
Their homely joys or destiny obscure,
Nor grandeur hear with a disdainful smile
The short and simple annals of the poor."

Friendship, that virtue which binds with links of steel some kindred spirits, and loyalty, its companion; these two have epitomized and typified many of the noblest manifestations of unselfishness and sacrifice.

Truth and Honor, divine offsprings, have pointed out the paths of rectitude and chastened the souls of those who have trod therein.

Courage and Chivalry, which have made bold the hearts of men and yet have softened deeds of valor with mercy. Gentleness and Reverence are their hand-maidens and loving kindness waits upon their footsteps.

Generosity and Unselfishness, which have spread the broad mantle of Charity around the shoulders of men, which have cared for the forlorn and distressed and alleviated the sufferings and afflictions of the children of men through all the ages and which are amongst man's noblest characteristics, for far, far too often have "Man's inhumanities to man made countless thousands mourn."

Wisdom, the product of thought and study, who gives to her votaries the wealth of all the ages. Think not that we represent the *summum bonum* of the wisdom of mankind, for wisdom is the accretion of human knowledge. In song and story, in many of the fine arts, not only for their era, but for any age the ancients were

transcendent. Down the corridors of time have been transmitted from generation to generation the experiences and achievements of men until today, though we stand on the pinnacle, yet we are not the builders; we have only taken the torch from their hands to pass it on until the structure is complete.

Then there is Faith; Faith in God, Faith in mankind, a belief in things unseen and undemonstrable, for "Faith is lost in sight," and which, though depending on a firm reliance in things intangible, yet permeates the breasts of the human race.

The list is too long to even enumerate, but in his contemplative moods it is well for man's soul to dwell upon his mental attributes, to analyze the mainsprings of his being and the very whys and wherefores of his existence. As old Omar has it, "The thoughtful soul to solitude retires," and meditates upon the problems of life.

The veil shall never be lifted; perhaps dimly we may catch some fleeting glimpse, perhaps there may come to us at times some momentary flash that reveals our kinship with Him who holds the world in the hollow of His hand but never until the mind is released from its human habitation shall it be known with a knowledge that is certain and sure. But yet, my friends, this I do know, that while the world shall live, until the human race shall have perished from the face of the earth, those attributes that stand for morality and virtue in all their forms shall still live and grow among men.

PULSATING EXOPHTHALMUS* WITH REPORT OF A CASE

R. H. NEWMAN, M.D., Knoxville

PULSATING exophthalmus is, as the name signifies, a pulsating, protruding eyeball, may be unilateral or bilateral, in sixty-nine reported cases, seven were bilateral.

May be traumatic or spontaneous, the traumatic cases comprise sixty-eight per cent of the total number reported, are most common in males, occur most frequently in the middle ages, as early as four years, and as late as fifty-eight years of age, or during the active period of one's life when the exposure to accidental injury is greatest. The injury may be direct trauma, as gunshot wounds, penetrating stab wounds, or indirect trauma from fracture of the base of the skull.

The spontaneous type is most frequently seen in the female (about seventy per cent). The average age of these cases is older than the traumatic type for obvious reasons. The most common cause of this type (twenty-eight per cent) is pregnancy and its allied conditions; other causes are coughing, straining at stool, vomiting and violent muscular effort. Causes:

- (1) Rupture of the internal carotid into the cavernous sinus. (Most common.)
- (2) Aneurysm of the intra or extra ocular portion of the ophthalmic artery.
- (3) Tumors that have broken into the orbit.

The condition is characterized by three cardinal symptoms:

- (1) Exophthalmus.
- (2) Pulsation.
- (3) Bruit.

The pulsation and bruit serves to differentiate this condition from other exophthalmii.

The first symptom to develop is exophthalmus. It comes on rapidly and within

a short time following the rupture the proptosis is usually downward and outward, and may become so great as to necessitate the suturing of the lids. The globe may be pushed back in the orbit with little resistance, and in this way the oculo-cardiac reflex may be elicited. There occurs in the upper lid venous ectasies or dilated veins. They are oval, easily compressed, and over these masses there is a decided pulsation and thrill. This is almost as pathognomic as the three mentioned cardinal symptoms, only it comes later in the case, about the fourth week. There is redness and swelling of the lids on the affected side, with some edema of the conjunctiva which may project between the lid margins. The pulsation is synchronous with systole.

The bruit is divided into:

- (1) Subjective.
- (2) Objective.

The patient usually hears the bruit and is able to describe it. He hears it in one of several ways, either as a continuous hum, hissing, or blowing, or like a waterfall.

The objective murmur is heard over the globe, frontal, temporal and mastoid regions, or down in the neck; it may be continuous, with a systolic accentuation. There is sometimes heard an added high-pitched whistling note; this is heard in seven per cent of the cases, and is regarded by the French authorities as pathognomonic of rupture of the carotid into the cavernous sinus, although it is not always heard in cases where there has been actual rupture of the carotid into the sinus.

Examination of the fundus: The veins are large, dark and may be tortuous, retinal hemorrhages are frequently seen, optic neuritis and choked disc are occasionally seen. About one-third of the cases de-

*Read before the Eye, Ear, Nose and Throat Section, Tennessee State Medical Association, Nashville, April 21, 22, 23.

velop optic atrophy. The vision varies from a steadily failing vision to a light perception and blindness. The pupils are frequently unequal and sluggish, and are either contracted or dilated, also there may be paralysis of some or all the extra ocular muscles. The external rectus being the most often involved, nerves of taste, hearing and smell have also been involved.

The prognosis as to life is favorable, but as to vision is decidedly unfavorable, the ocular mortality is high, keratitis or lagophthalmus and neuro-paralytic keratitis are seen as complications, and suturing of the lids should be done immediately upon the first appearance of corneal involvement.

Iritis and irido-cyclitis also sometimes occur as complications.

Treatment: Ligation of the great vessels in all its modifications has been tried, but has not been attended with enough success to stamp the procedure with universal approval. The operation gives a very high mortality, so the type of operation to be done depends upon the age, physical condition of the patient and the temerity of the operator.

The tin clamp operation of Parham is probably best of all, a certain number of cases have had spontaneous recovery.

Gelatin injections have been used.

Non-operative measures of value are rest in bed, iodides in large doses, digital or instrumental pressure over the carotid every day as long as can be borne. If this is not successful, then some phase of ligation may be performed, bearing in mind that death may ensue in a short time, and also that collateral circulation will probably be established soon and the condition resume its former status. Ligation of the superior or inferior ophthalmic vein sometimes is successful.

All treatment is very unsatisfactory.

The following history is of a case which recently came under my observation:

Case history: February 9, 1925, Frank C., colored. Station porter, L. & N. Railway. Aged fifty-four. Married. Has five children, three living in good health, two dead from ordinary dis-

eases. Personal history, ordinary diseases of childhood. No severe illness. Denies any G. U. infection.

History of accident: December 23, 1924, while hauling mail to depot in a wagon an automobile hit the wagon, knocking him down. He was unconscious about fifteen hours; awoke with pain in right side of head and neck and right eye was swollen. This swelling subsided, but right eye is somewhat protruding and eye remains red, and there is some pain at intervals in head and neck.

Examination: Patient fairly well nourished, but looks older than his age. Right eye slightly protruding, but covered by lids on closing. Ocular and palpebral conjunctiva uniformly congested, lachrymal sac and puncta negative. Ocular movements normal. Tension in right eye slightly plus but on further examination found it only apparently so, and the impression of increased tension was caused by pressure on the eye from behind.

Vision: R. E. 5; L. E. 8.

Examination fundus: No atrophy swelling nor cupping of nerve head. Somewhat overfilling of the veins; increase in the light streak, but not abnormal for his age; otherwise negative.

Probable diagnosis: The eye is pushed forward by the unabsorbed remains of the Cellulitis which he had at the time of injury or by an unabsorbed hemorrhage into the orbit.

Treatment: He was given a protective dressing for his eye, Kalii Iodidii in increasing doses, and told to return again within two weeks.

February 18, 1925. Patient returned, eye markedly protruding. Conjunctiva swollen and protruding beyond palpebral fissure; unable to close eye; slight edema and enlargement of veins of upper lid.

Palpation near its inner angle, elicits a distinct thrill. Auscultation brings out a distinct systolic bruit, accompanied by a high-pitched whistling note. The greatest point of intensity is over the inner half of upper right eye lid, but it can be heard over the other eye, right mastoid and vertex of skull.

Examination of fundus: No change since previous examination, except the veins are slightly fuller.

Vision: R. 1.

Diagnosis: Pulsating exophthalmus, traumatic in origin, rupture of the internal carotid into cavernous sinus.

Treatment: He is wearing a protective dressing snugly applied. Cornea is in good condition at this date, March 24th. There is no further protrusion of the eyeball—in fact, it seems to be somewhat receded. On account of his age, physical condition, and the high rate of mortality, I have hesitated to advise operative measures. He

is taking K. I. 80 gr. daily at this time. A Wasserman was made which was 4 plus and specific treatment is being given.

April 17, 1925. Patient has not returned for further observation or treatment. A telephone communication from his home physician states that he is feeling well. The redness, swelling and exophthalmus is greatly improved, and he is continuing his specific treatment.

The outcome in this case is purely speculative. Personally, I would like very much to give a favorable prognosis in view of the fact that his condition has improved, but with the history of these cases in mind, I hesitate to do so.

DISCUSSION

DR. G. H. PRICE, Nashville: I was very much interested in this paper, very much more so in the history of the patient the doctor reported. His case is rare. I have seen several of them—one of them a young woman, some twenty-four years of age, in whom there was no definite history connected with the case, but after a while the case responded spontaneously and the patient recovered. I have seen some cases of this kind that occurred in injuries from railroad accidents. Some of those cases have terminated fatally, especially so where there was involvement of both eyes—exophthalmus and pulsation both. I saw a case not very long since in which some symptoms of this character had developed. I only saw that patient once. What his condition is now I do not know. It is a very interesting condition to have to deal with and one, as the doctor suggests, that is not infrequently of very serious moment because if there is considerable involvement and rupture of the choroid the changes which are produced make it difficult for mechanical aids to assist in allowing absorption to take place and relieve the exophthalmus.

I recall one case of exophthalmus that was very unique in that the injury was not primarily to the eye. A small Negro boy, about eight or nine years old, fell from a post and struck the right side of his head on something and had a small contusion. In a day or two his scalp began to elevate all the way around, and they thought he was developing a case of erysipelas. However, the swelling did not have the characteristics of erysipelas, as far as the line of demarcation showed. When I saw him the scalp was elevated two-thirds over his head, the line of elevation running down the front, over the ear and down on the cheek, across the lid and back of the eye. The eye was protruding and had been pulsating, but the pulsation had ceased. I could find nothing in that case but the rupture of a blood vessel on the scalp which could cause so much pressure. I therefore opened the scalp above the left ear and found a hematoma. The eye receded, but vision was lost inasmuch as he had the condition for some time before I saw him.

These cases are interesting, but we do not see many of them. Those that are interesting are the ones that recover upon correction of the etiological factor. I am very much obliged to the doctor for reporting his case, and I hope, from the history of the case, that the patient will recover.

DR. R. H. NEWMAN, Knoxville (closing the discussion): I had hoped that some one would tell me just how to cure this man. Dr. Holloway reports a case that recovered spontaneously. This man's occupation was such that he sat down and worked on a bench. He had a contrivance fixed with a ball making pressure over his carotid and in this way persistently keeping up the pressure completely recovered.

These are very difficult cases to deal with. I do not believe I can promise this man very much.

THE TREATMENT OF HYPERTHYROIDISM

N. S. SHOFNER, M.D., Nashville

BY the term hyperthyroidism I wish to refer to all conditions in which the function of the thyroid gland is accelerated and in which symptoms are referable to this abnormal physiology. This is a comprehensive term and is intended to include all the cases which are variously classified as exophthalmic goiter, Graves' disease, Basedow's disease, Parry's disease, toxic adenoma and thyrotoxicosis. While I realize that there are some grounds and good authority for differentiating between exophthalmic goiter and toxic adenoma, it is a fact that the so-called toxic adenoma often presents exactly the same clinical picture as the classical exophthalmic goiter with the single exception that exophthalmos is not present. Exophthalmos is simply one sign and, indeed, a variable one. There are, on the other hand, cases presenting all the other cardinal symptoms of exophthalmic goiter, whose glands, upon pathological examination, present no demonstrable adenomata, and which would be universally reported by pathologists as "hyperplastic," but yet not having this sign of exophthalmos. It seems altogether illogical to name a disease for one sign which, while it is often conspicuous when it does exist, is not even constant and is certainly not as distressing or as important as other signs or symptoms such, for instance, as tachycardia.

The important features of all these cases, however classified, are the same and they should all be treated along the same general lines. I believe that the inclusive term, hyperthyroidism, is satisfactory for all practical purposes and eliminates confusion.

Before proceeding to a discussion of the details of the treatment of hyperthy-

roidism I wish to make a few general remarks and point out that neither the internist nor the surgeon alone can hope to effect a cure. Hyperthyroidism is a shining example of diseases which require the fullest and heartiest co-operation between the two branches of the medical profession. It is true that some cases of hyperthyroidism have been cured and remained cured by medical treatment alone. It is also true that some cases have remained permanently well following operation without subsequent medical supervision. Such cases are comparable to the cases of acute appendicitis which are cured without operation or to duodenal ulcers which remain well after gastroenterostomy even though they use no discretion in diet. They are exceptional and should not be taken as models.

This brings me to the importance of early operation in hyperthyroidism. The usual course of such cases is that there are periods of great activity followed by remissions in which the symptoms have disappeared entirely or greatly improved. The tendency is for each exacerbation to be worse than the one before and each one is likely to leave its mark in the form of some permanent damage which cannot ever be quite repaired. For this reason early medical treatment should be merely in preparation for operation so that as little permanent damage as possible may be done and the patient may be spared the necessity of prolonging his disease.

After having decided upon operation there are a few important points to be ascertained at the outset in order to form an opinion as to the operative risk and as to the most advantageous time for operation. Naturally a careful physical examination will have been made before reaching a diagnosis.

The state of the myocardium is extremely important. Operation should never be undertaken in the presence of oedema of the extremities or of ascites. The blood pressure should be observed and the pulse rate and rhythm should be observed and recorded over a period of several days. The degree of dilatation of the heart is important.

The kidney function should always be tested by means of phenolsulphonethalein elimination. An elimination of less than thirty per cent in two hours indicates a very bad risk.

The patient's mental state is a big factor. The slightest evidence of delirium or coma is indication for deferring operation. Mental deterioration is perhaps the most unfavorable single sign in hyperthyroidism.

Basal metabolism rates may be estimated, but I do not consider this of any value as regards prognosis. Its proper place seems to be as a diagnostic aid in borderline cases.

The pre-operative treatment should be carried out in a hospital. The admission to the hospital should be made as mild an ordeal as possible, for it is a terrifying experience to many people of even phlegmatic temperament. Formal histories and examinations by the house staff should be avoided and instead casual examinations of different parts of the body should be done at intervals without tiring or exciting the patient. Every effort should be made to maintain a happy state of mind and encouragement should be offered at every opportunity. The subject of the approaching operation should not be discussed, but if the patient insists upon referring to it and asks pointed questions, it should be spoken of in such manner as to minimize its seriousness.

The effort is made to produce a state of mental negativity and physiological rest as far as is possible.

The following routine is important:

Absolute rest in bed.

Ice bag continuously to the precordium.

Restriction of visitors to two a day for one-half hour each.

A fluid intake of at least 3,000 cc. of fluid per day.

If there is nausea or vomiting which prevents taking water by mouth it should be given subcutaneously, using novocain in normal saline to abolish pain.

The diet should be liberal and should consist principally of carbohydrates. Highly seasoned foods and foods with high protein content should be avoided.

Routine medication is: (1) Tincture of digitalis, M. XXX, every four hours for eight doses. (2) Sodium bromide, grains three, at bedtime. Codein or morphine may be substituted for this if necessary to produce sleep. (3) Thyroid extract, grains two, is given by mouth the night preceding the operation and the morning of operation. (4) Morphine, grains one-fourth, and atropine, grains 1/150, are given by hypodermic an hour before operation.

With the above routine most patients will be ready for operation, either ligation or thyroidectomy, within three or four days. In some cases Lugol's solution, ten minims, three times a day, seems to be helpful, but it usually requires a week to ten days for its maximum effect.

I wish to mention, in passing, two subjects which recently have been widely discussed. The first is concerning the alleged harmful effects of the digitalis preparations in hyperthyroidism. I have used digitalis in many cases and have never observed any ill effects except occasional nausea, vomiting or diarrhea. My experience has been greatest with the tincture of digitalis, but it is very likely that "Digifolin" is a more stable and more satisfactory preparation. The digitalis effect is the main objective. In my opinion digitalis stands next to morphine in order of useful drugs in the treatment of hyperthyroidism.

The second subject to which I refer is the opinion which has been expressed that the use of Lugol's solution as a pre-operative measure obviates the necessity

of ligations of the superior thyroid artery as a preliminary measure for thyroidectomy. I am aware of many brilliant effects from Lugol's solution, but I am aware also of many failures. It is undoubtedly of great aid in the pre-operative treatment of hyperthyroidism, but I believe that sometimes the improvement with Lugol's solution is more apparent than real and it is not safe to tempt Providence too far and abandon ligations and a period of rest as a preliminary step to thyroidectomy. It stands to reason that even though a patient may show remarkable improvement and seem a safe risk as a result of Lugol's solution, it must take some time and rest to actually restore tissues exhausted by such a disease as hyperthyroidism. Several men have reported fatalities as a result of being misled by the improvement from Lugol's solution into performing thyroidectomy where ligation should have been done. Lahey, of Boston, has had such an experience. He has adopted the policy of selecting cases for ligation after a careful observation. If these cases improve under treatment, whether Lugol's solution or other means, he is glad, but ligates just the same. I believe that his policy is sound. Ligation is an additional precaution which should never be forgotten in a bad risk patient.

It is difficult to make any hard and fast rule as to which cases should have preliminary ligations and which should not. The decision must be made in each case after a careful study of the patient from every angle and must be based upon one's clinical judgment, which is the best guide after all, but whose processes cannot be accurately expressed. In general, I should say that a good working rule is: "When in doubt, ligate."

The operation of ligation of the superior thyroid artery should be a very minor surgical procedure. It should always be done in the patient's room and under local anesthesia, with perhaps a little nitrous oxide and oxygen. It should not require more than a few minutes and

usually the reaction is not severe. Only one side should be ligated at a sitting. Ligation may be regarded as not only a therapeutic measure, but as a test of the patient's condition. If the first ligation produces very slight or no reaction it may be considered safe to proceed with thyroidectomy a few days later instead of with a second ligation. The usual interval between the two ligations is three days, but in case of an unusually severe reaction it must be prolonged. In any event, the second ligation should never be performed until the reaction from the first one has entirely subsided.

The usual interval between the second ligation and the final operation is three months, but here again one must be governed by the patient's condition. During this period the patient is at home under proper medical supervision and is given rigid instructions as to rest, social activities, diet and exercise, and a monthly report should be made of important points such as hours of rest and of sleep, pulse rate, blood pressure and weight. If possible, a consultation between internist and surgeon should be had at the time of these reports.

During the three months of rest between ligations and thyroidectomy most patients improve remarkably, frequently gaining fifteen or twenty pounds and sometimes more, and returning in far better condition for thyroidectomy than at the first admission.

When the time for thyroidectomy arrives the greatest care must be exercised in preserving all the patient's reserve that is possible. The margin of safety is very narrow and the slightest disturbing element may have disastrous consequences. All known factors of safety must be marshalled for the occasion. This means protecting him from psychic as well as physical disturbance. The operation should be performed in bed in the patient's room in order to avoid the mental anguish of being ushered into the operating room and being surrounded by nurses and doctors with masks and white

gowns and caps, who carefully guard a formidable array of shining instruments of torture—a very intimidating experience for even unflinching nerves but almost unbearable for these patients whose emotions are constantly keyed up to the breaking point. The first person to be admitted to the room should be the anesthetist who has previously made the patient's acquaintance and made several visits and whose presence does not cause fear or excitement. As gently as possible the gas mask is adjusted, and while the anesthetist engages the patient in diverting conversation, a very light stage of anesthesia, so-called analgesia, is induced. Silently the surgeons and nurses enter, prepare the field of operation, and anesthetise the neck with massive infiltration of novocain one-half of one per cent, without adrenalin. The operation proceeds as quietly as possible and in most cases the patient is kept in a somewhat dreamy state and chats pleasantly with the anesthetist. If, at any time, the pulse rate rises too high or the patient becomes very nervous, the operation should be discontinued and the wound packed open with gauze saturated with 1/5000 pro-flavine. This packing can be removed and the operation completed next day or the wound closed, as the conditions may dictate. In very severe cases it is wise to resect only one lobe at the first sitting and pack the wound open. If the condition next day justifies it the other lobe may be resected. If not, the wound may be closed and after the immediate convalescence the patient may be sent home for several months and return in far safer condition for completion of the operation. The value of the two-stage operation cannot easily be overestimated. It is safer to either pack open for twelve or twenty-four hours or drain widely with gauze all wounds in cases of thyroidectomy for severe hyperthyroidism.

I shall not discuss the technique of thyroidectomy except to say that as much gland should be removed as can be done

without injuring the recurrent laryngeal nerves and the parathyroid glands. In performing thyroidectomy these structures present very real dangers if enough gland is removed. If enough gland is not removed, there is great danger of not effecting a cure. One has to steer very carefully here between the Scylla of incomplete cure and the Charybdis of tetany and vocal chord paralysis.

Immediately following thyroidectomy the patient is placed in a comfortable position, usually with the head and shoulders on three or four pillows.

Morphine, one-sixth of a grain, should be given by hypodermic as often as necessary for absolute comfort and quiet. These patients tolerate morphine exceptionally well and rest is of paramount importance.

Hypodermoclysis of 2000 cc. of normal saline containing 45 cc. of one-half of one per cent novocain is given and the site of election of this is in the abdomen, directing the needles laterally from the edge of the rectus muscles. The fluid intake should be 3000 cc. a day, and if there is nausea or inability to take water by mouth the hypodermoclysis should be repeated. The drain should be removed in twenty-four hours and the skin clips in three days.

Complications are not frequent, but when they do occur they are serious and prompt treatment is essential.

Severe post-operative reaction, acute hyperthyroidism, may occur in spite of all precautions. This is manifested by high fever, rapid pulse, rapid respiration, restlessness, nausea and vomiting. In such cases the wound should be opened and packed if it is not already open. If it has been packed the packing should be changed in order to prevent absorption of wound secretion from the saturated gauze. The temperature should be controlled by ice bags or ice pack in severe reactions. Blood transfusion of 500 or 600 cc. is of greatest benefit. Some cases react well to Lugol's solution and thyroid extract if it can be retained.

Hemorrhage is more common following thyroidectomy than following most other operations because of the exceedingly vascular area. Hematoma may result if there is not sufficient escape for the blood and if not evacuated promptly may produce death by asphyxiation.

Paralysis of the vocal chords, either unilateral or bilateral, produces stridor and may produce closure of the glottis with suffocation. This requires immediate tracheotomy. Hyperthyroidism cases cannot tolerate suboxidation even to a slight degree. Tracheotomy should not be delayed, therefore, when there is even a little cyanosis and labored respiration or stridor.

Tetany may occur even when the parathyroid glands have not been removed, due to either interference with their blood supply or oedema. It should be treated by immediately opening the wound to re-

lieve possible pressure and by the intravenous administration of "parathyrin."

Following the patient's discharge from the hospital he should be placed again under strict medical supervision for three months and a little less strict supervision for six months or a year more. All foci of infection should be removed as soon as the condition justifies it and severe cases should always avoid unnecessary strain or fatigue, either mental or physical.

In concluding, I wish to disclaim any originality for the subject matter of this paper. I have merely tried to express a point of view in regard to the treatment of hyperthyroidism which has been reached by contact with a great number of such cases in connection with Dr. G. W. Crile over a period of several years at Lakeside Hospital and the Cleveland Clinic.

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J. F. GALLAGHER, M.D. -----Editor

R. C. DERIVAUX, M.D. -----Associate Editor

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EDITORIAL

OUR NEW CONSTITUTION.

At the annual meeting of the State Association, which was held in Knoxville in 1924, a committee was appointed composed of Dr. S. R. Miller of Knoxville, Dr. A. F. Richards of Sparta, and the Secretary to redraft and codify our Constitution. This committee submitted a report to the House of Delegates at the annual meeting held in Nashville in 1925. The majority of the committee had a report which simply incorporated the amendments which had been passed since the old Constitution was printed. One member of the committee submitted a report which almost rewrote the document. The committee met with the view of reconciling the two documents, but it was soon found that there was not sufficient time for this to be done.

This fact was reported to the House of Delegates and they found that it would be highly impracticable for that body to consider each article of the Constitution and By-Laws, and so it was voted that the matter be rereferred to the same committee with plenary power and that the action of this committee would be the action of the House. This proposition carried unanimously.

The committee set to work and formulated a Constitution and By-Laws, which was concurred in by the three members of the committee. The Constitution and By-Laws, which will be found in this issue of the Journal, represents very strenuous work covering a period of two years and the committee thinks, after reviewing the

Constitution and By-Laws of many other states, and the model Constitution and By-Laws outlined and published by the American Medical Association, that this is almost ideal.

PAY YOUR DUES.

To paraphrase a well-known saying, the time has almost passed when all good members should pay their dues to the county and state societies. Wilson County took time by the forelock and sent in their list before payment was actually due. There will be some, of course, who will wait until the very last moment to perform this simple duty. It would relieve this office of an enormous amount of routine work if the dues were reported early. In this report the officers of the society should be indicated. As the annual meeting of the State Society approaches there is an enormous amount of work involved in the arrangement of place of meeting, program, exhibitors, etc., which taxes the capacity of the limited force of the Secretary's office. Do your bit, Mr. Secretary, and relieve the congestion we shall have here as the meeting approaches.

DEATHS

Dr. R. L. Burks, retired physician of Livingston, aged 79, died December 3rd.

Dr. William D. Cocke, aged 61, died at his home in Whiteville, December 6th. Dr. Cocke was a graduate of the Memphis Hospital Medical College in the class of 1893. He is survived by Dr. Edwin W. Cocke of Bolivar, Superintendent of the Western State Hospital for the Insane.

Dr. Thomas H. Woolsey of Greeneville, aged 56 died December 7th. Dr. Woolsey was a graduate of the University of Tennessee, College of Medicine, Memphis, of the class of 1900.

Dr. Zack Biggs of Trenton, aged 94, died December 16th. He was a graduate of the University of Nashville, in the class of 1856.

Dr. J. M. Anderson of Flat Creek, honorary member of the Lincoln County Medical Society died December 13th. Dr. Anderson was 88 years of age and a graduate of the University of Georgia, Medical Department, Augusta, of the class of 1860.

MEDICAL SOCIETIES

The Smith County Medical Society have elected the following officers for the New Year: Dr. J. J. Beasley, Pleasant Shade, president; Dr. J. H. Chism, Carthage, vice-president; Dr. B. J. High, Elmwood, secretary-treasurer.

The Hamblen County Medical Society have elected officers for the coming year as follows: Dr. P. L. Henderson, Morristown, president; Dr. F. F. Painter, Morristown, vice-president; Dr. S. M. Ryburn, Morristown, secretary-treasurer; Dr. W. G. Ruble, Morristown, retiring president, delegate to the State Convention.

Bradley County Medical Society have elected the following officers to serve during 1926: Dr. Robert L. Bean, Cleveland, re-elected president; Dr. J. F. Gilbert, Cleveland, re-elected vice-president; Dr. Hubert W. Harris, re-elected secretary-treasurer. A get-together, good fellowship meeting has been planned for their semi-annual banquet to be held Thursday, December 17th.

Officers for the White County Medical Society have been elected as follows: Dr. E. B. Clark, Clifty, president; Dr. A. A. Bradley, Cookeville, vice-president; Dr. A. F. Richards, Sparta, re-elected secretary-treasurer; Dr. Vernon Hutton, Ravenscroft, Censor, Dr. W. M. Johnson, Sparta, delegate, Dr. A. A. Bradley, Cookeville, alternate delegate.

Dr. Charles F. Webb, of Jackson, vice-president of the Crook Sanatorium, was elected president of the Madison County Medical Society by acclamation at the meeting of that society on Monday night, December 7th. Dr. Harold H. Webb, Jackson, roentgenologist of the Crook Sanatorium and Memorial Hospital, was elected vice-president; Dr. Jack R. Thompson, Jackson, re-elected secretary-treasurer by a unanimous vote.

At the regular monthly session December 2nd, of the Wilson County Medical Society the following officers were elected for 1926: Dr. R. E. Johnson, Lebanon, president; Dr. W. S. Dotson, Lebanon, vice-president; Dr. J. R. Bone, Lebanon, re-elected secretary-treasurer; Dr. W. S. Dotson, delegate to State Convention; Dr. R. B. Gaston, Lebanon, alternate delegate.

Officers elected for the Carroll County Medical Society for the coming year are: Dr. O. W. Fesmire, Atwood, president; Dr. R. M. Elinor, McKenzie, vice-president; Dr. E. M. Everett, McKenzie, secretary-treasurer.

The Monroe County Medical Society met December 9th and elected the following officers to serve the coming year: Dr. S. N. Penland, Madisonville, re-elected president; Dr. H. C. Shearer, Madisonville, vice-president; Dr. L. L. Barnes, Sweetwater, secretary-treasurer.

At a recent meeting of the Shelby County Medical Society the following officers were elected: Dr. J. A. Crisler, Sr., president; Dr. Louis Levy, vice-president, Dr. T. N. Coppedge, re-elected treasurer; Dr. A. F. Cooper, re-elected secretary; Dr. J. M. Maury, Censor; Dr. B. W. Fontaine, Trustee of the Memphis Medical Journal. All are residents of Memphis.

The Coffee County Medical Society has re-organized and reported for the New Year the following officers: Dr. W. M. Wilson, Tullahoma, president; Dr. E. P.

Vaughan, Manchester, vice-president; Dr. D. H. Sneed, Manchester, secretary-treasurer.

At the regular monthly meeting of the Roane County Medical Society, December 15th, the following officers were elected for 1926: Dr. J. C. Fly, Kingston, president; Dr. W. W. Hill, Harriman, vice-president; Dr. John Roberts, Kingston, secretary-treasurer.

NEWS NOTES AND COMMENT

Dr. R. N. Taylor, of Knoxville, has been assigned to the Infirmary of the University of Tennessee.

Dr. J. G. Eblen, a resident of Lenoir City for the past ten years, and a member of the Loudon County Medical Society, has been elected mayor of that city.

The Tri-County Medical Association, embracing the counties of Carroll, Henry and Weakley, held a meeting in Mc-

Kenzie that was well attended. One of the interesting features of the meeting was the illustrated lecture by Dr. O. W. Floyd, of Nashville, on "Surgical Cure for Organic Lesions of the Stomach."

Dr. S. S. Moody, formerly of Shelbyville and Louisville, Ky., has been made county health officer of Weakley County and has changed his residence to Dresden.

Expenditure of \$280,000 for the construction of the first unit in a million-dollar building program to provide for the expansion of the Medical Department of the University of Tennessee was ratified at a meeting of the board of trustees of the university, December 15.

The members from Tennessee and Kentucky of the American College of Surgery will gather in Memphis on January 18 and 19 to discuss topics of interest, attend clinics and give the public generally the benefit of their finds.

CONSTITUTION, BY-LAWS AND PRINCIPLES OF MEDICAL ETHICS OF THE TENNESSEE STATE MEDICAL ASSOCIATION

Revised 1925

CONSTITUTION

ARTICLE I

Name of the Association

The name and the title of this organization shall be The Tennessee State Medical Association."

ARTICLE II

Purposes of the Association

The purposes of this Association shall be to federate and bring into one compact organization the entire medical profession of the State of Tennessee and to unite with similar associations in other States to form the American Medical Association, with a view to the extension of medical knowledge, and to the advancement of medical science, to the elevation of the standard of medical education, and to the enactment and enforcement of just medical laws, to the promotion of friendly intercourse among physicians and to the guarding and fostering of their material interests, and to the enlightenment and direction of public opinion in regard to the great problems of state medicine, so that the profession shall become more capable and honorable within itself, and more useful to the public in the prevention and cure of disease and in prolonging and adding comfort to life.

ARTICLE III

Component Societies

Component Societies shall consist of those County Medical Societies which hold charters from this Association.

ARTICLE IV

Composition of the Association

Section 1. This Association shall consist of Members, Associate Members, Veteran Members and Honorary Members.

Sec. 2. The Members of this Association shall be Members of the component County Medical Societies who have been certified to the Secretary of this Association and whose dues have been paid for the current year.

Sec. 3. Associate Members shall be commissioned officers in active service of the United States Army, Navy and Public Health Service, who apply for membership in this Association, and are elected by a two-thirds vote of the House of Delegates.

Sec. 4. Veteran Members are those who have

been members of component Societies for not less than twenty-five years, and who, because of age or impaired health, are made Veteran Members of their Component Society.

Sec. 5. An Honorary Member is one who is a member of another State Association, or other reputable society, who is pre-eminent in general or special scientific work, whose name, with detailed information concerning his educational and professional qualifications, is presented in writing by three Members of this Association, and who is elected by a two-thirds vote of the House of Delegates.

ARTICLE V

House of Delegates

The House of Delegates shall be the legislative and business body of the Association, and shall consist of (1) Delegates elected by the Component County Societies; (2) ex-officio the Officers; (3) the ex-Presidents of the Association in attendance at that session.

ARTICLE VI

Sections

The House of Delegates may provide for a division of the scientific work of the Association into appropriate Sections, as the need may arise.

ARTICLE VII

Annual Meetings and Sessions

Section 1. The Association shall hold an Annual Meeting at such time and place as herein-after provided, and the Scientific Sessions shall be open to all registered members and guests.

Sec. 2. The Scientific Session shall begin on the second Tuesday in April, except as provided in Chapter 11, Section 3, of the By-Laws; the Sections shall meet on the Monday preceding.

Sec. 3. The place for holding each annual meeting shall be fixed by the House of Delegates, provided the meetings shall rotate alternately between the three grand divisions of the state.

ARTICLE VIII

Officers

Section 1. The officers of the Association shall be a President, a Vice-President for each of the three grand divisions of the state, a Secretary, three Trustees, one from each grand division of the state, one of whom shall be elected annually by the Trustees as Treasurer of the Association, and ten Councilors, one from each Congressional

District, and a Speaker of the House of Delegates.

Sec. 2. The President, three Vice-Presidents, Speaker of the House of Delegates and the Secretary shall be elected annually for one year. One Trustee shall be elected annually for three years. Five Councilors shall be elected annually for two years.

Sec. 3. The President, Secretary and Speaker of the House of Delegates shall be ex-officio members of the Council.

Sec. 4. All officers shall hold office until their successor is elected and assumes office.

Sec. 5. All officers of the Association, except the Councilors, shall be elected on the third day of the Annual Meeting, but shall not assume office until their predecessor's year's work is completed.

Sec. 6. No Delegate, and no member who has not been a member in good standing for five years next preceding the election, or who is not in attendance at the meeting, shall be eligible for election as President or Vice-President.

ARTICLE IX

Board of Trustees

Sec. 1. The Board of Trustees, composed of three members of this Association, elected as heretofore provided, shall select its own Chairman, who shall be ex-officio Treasurer of this Association. The Trustees shall have entire control of the publication, the policy, the editorial and financial management of the Journal of the Association. It shall be authorized and empowered to make all contracts necessary for the conduct of the Journal.

Sec. 2. The Chairman of this Board, who is also ex-officio Treasurer of this Association, shall be the custodian of all the funds derived from the Journal.

Sec. 3. The Board of Trustees shall hold semi-annual meetings, one of which shall be held on the last day of the annual meeting, and such other meetings as the business of the Journal may require, subject to the call of the Chairman. The Board of Trustees shall make all expenditures of the funds of the Association, except as ordered by the House of Delegates, and render at the Annual Meeting a full and detailed account of all receipts and disbursements. In the event of a vacancy by death or resignation of any member of the Board of Trustees between the Annual Sessions of the Association, the Vice-President for that division of the state in which the vacancy occurs, shall fill the position until the next Annual Meeting.

Sec. 4. The Board of Trustees shall serve without compensation, except the Chairman, who is ex-officio the Treasurer, whose compensation shall be fixed by the House of Delegates; however their actual expense in attending the meet-

ings of the board shall be paid out of the funds of the Association. This is not to apply where a meeting is held at the Annual Session.

ARTICLE X

Funds and Expenses

Sec. 1. The fiscal year of the Association shall be April 1st to March 31st.

Sec. 2. The annual dues shall be \$4.00 for each member, but no dues shall be paid by Veteran or Honorary Members.

ARTICLE XI

Referendum

Section 1. The general meeting of the Association may by a two-thirds vote of the members present and voting order a general referendum upon any question pending before the House of Delegates or that may have been determined by it at that Annual Meeting. The House of Delegates may by a similar vote of its own members submit to the general meeting the question as to whether any matter shall be submitted to a general referendum; and if a majority of the members present and voting shall vote in favor of such referendum it shall be so ordered and the matter shall be referred accordingly.

Sec. 2. Within thirty days after the adjournment of each Annual Meeting of this Association the Secretary thereof shall transmit to the Secretary of each component County Society all questions submitted to general referendum such Annual Meeting as above provided; each component society will then take the vote of its members upon such questions so referred and will report the results to the Secretary of this Association.

ARTICLE XII

The Seal

The Association shall have a common Seal, with a power to break, change or renew the same at pleasure.

ARTICLE XIII

Amendments

The House of Delegates may amend any article of this Constitution by a two-thirds vote of the Delegates registered at that Annual Session; provided, that such amendment shall have been presented in open meeting at the previous Annual Session, and that it shall have been sent officially to each component County Society at least two months before the session at which final action is to be taken.

BY-LAWS

CHAPTER I

Membership

Section 1. All Members, Associate Members, Veteran Members, Honorary Members and invited guests, shall be privileged to attend all

scientific meetings, and take part in the discussion of all scientific questions, but Members and Veteran Members only shall be entitled to vote and hold office.

Sec. 2. The name of a physician upon a properly certified roster of members, or list of delegates, of a chartered County Society, which has paid its annual assessment, or guest whose name is on the program, shall be prima facie evidence of his right to register at the Annual Session.

Sec. 3. No person who is under sentence of suspension or expulsion from any component society of this Association, or whose name has been dropped from its roll of members shall be entitled to any of the rights or benefits of this Association, nor shall he be permitted to take any part in any of its proceedings until such time as he has been relieved of such disability.

Sec. 4. Each member in attendance at the Annual Session shall enter his name on the registration book, indicating the component society of which he is a member. When his right to membership has been verified by reference to the roster of his society, he shall receive a badge, which shall be evidence of his right to all the privileges of membership at that session. No Member of Delegate shall take part in any of the proceedings of an Annual Session until he has complied with the provisions of this section.

Sec. 5. There shall be in addition to the general scientific assembly:

(1) A section for specialists on Eye, Ear, Throat and Nose, to be known as the Section of Eye, Ear, Nose and Throat.

(2) A section for specialists on Railroad and Industrial Surgery, to be known as the Tennessee Association of Railway Surgeons, which sections may hold separate or joint session at the place of the Annual Session of the Association. They shall meet on the day preceding the Annual Session for the discussion of such technical questions as would not be of general interest to the scientific assembly.

(3) The officers of a section shall be a Chairman, a Vice-Chairman and a Secretary, each of whom shall be elected annually by a majority vote of the section.

(4) The date and opening hour of the meeting of the sections shall be determined before the program of the General Meeting is published.

CHAPTER II

Annual and Special Sessions of the Association

Section 1. The Association shall hold an Annual Session on the second Tuesday in April, and the sections on Monday, and at such place as has been fixed at the preceding Annual Session, but it is agreed that the meetings shall rotate annually between Middle, West and East Tennessee.

Sec. 2. Special sessions of either the Association or House of Delegates shall be called by the President at his discretion, or upon petition of twenty Delegates.

Sec. 3. If for any valid reason, local or otherwise, an annual meeting cannot be held on date as named, the President, the three Vice-Presidents, the Secretary and the three Trustees may fix another date, provided the secretaries of the component societies are notified in advance of the change and date by the Secretary of the Association, and, if feasible, each member should be notified by a personal communication mailed to his home address by the latter.

CHAPTER III

General Meetings

Section 1. The general meeting shall include all registered Members, Associate Members, Veteran Members, Honorary Members and guests, and have equal rights to participate in the proceedings and discussions; and, except honorary members and guests, to vote on pending questions. Each general meeting shall be presided over by a president, or, in his absence or disability, or by his request, by one of the Vice-Presidents. Before it, at such time and place, as may have been arranged, shall be delivered the annual address of the President and the annual orations; and the entire time of the session, so far as possible, shall be devoted to papers and discussions, clinics and demonstrations, relating to scientific medicine.

Sec. 2. The general meeting shall have authority to create committees or commissions for scientific investigation of special interest and importance to the profession and public, and to receive and dispose of reports of the same, but any expense in connection therewith must first be concurred in by the House of Delegates.

Sec. 3. Except by special vote, the order of exercise, papers, and discussions as set forth in the official program, shall be followed from day to day until it has been completed, and all papers omitted may be recalled in regular order.

Sec. 4. No address or paper before the Association, except the addresses of the President and invited guests, shall occupy more than twenty minutes in its delivery; and no member shall speak longer than five minutes, nor more than once on any subject, provided each essayist be allowed five minutes in which to close the discussion.

Sec. 5. All papers read before the society shall be its own property. Each paper shall be deposited with the Secretary when read; and if this is not done, it shall not be published; but each essayist may furnish a copy to one or more medical journals for publication, after the paper has

been read before the Association and published in the official Journal.

CHAPTER IV

House of Delegates

Sec. 1. The House of Delegates shall meet annually at the time and place of the annual session of the Association. It shall meet at 2 o'clock Tuesday afternoon and morning and afternoon thereafter until its work is finished, and at such hours as will least interfere with its members attending the scientific sessions; but if the business interests of the Association and profession require, it may meet in advance or remain in session after the final adjournment of the general meeting; the extraordinary meetings being subject to the call of the Speaker.

Sec. 2. Each component county society shall be entitled to send to the House of Delegates each year one Delegate for every fifty members, and one for every fraction thereof; but each county society holding a charter from this Association, which has made its annual report, and paid its assessments as provided in this Constitution and By-Laws, shall be entitled to one Delegate.

Sec. 3. A majority of the registered delegates shall constitute a quorum, and all the meetings of the House of Delegates shall be open to members of the Association.

Sec. 4. From among the members of the House of Delegates the Speaker of the House of Delegates, for the purpose of expediting proceedings, shall appoint Reference Committees to which reports and resolutions shall be referred. He shall also appoint a Committee on Credentials and such other committees as may be considered by him to be necessary.

Sec. 5. It shall elect representatives to the House of Delegates of the American Medical Association in accordance with the Constitution and By-Laws of that body, for a period of three years, no two residing in the same grand division of the state. Fifty dollars shall be donated to each Delegate representing the Association at the American Medical Association meetings.

Sec. 6. It shall, upon application, provide and issue charters to County Societies organized to conform to the spirit of this Constitution and By-Laws and rescind the charter of any component society, not conforming with the Constitution and By-Laws of the Association, or the ethics of the American Medical Association, when so recommended by the Councilors.

Sec. 7. In sparsely settled sections it shall have authority to organize the physicians of two or more counties into societies, to be designated by hyphenating the names of two or more counties, so as to distinguish them from district and other classes of societies; and these societies, when

organized and chartered, shall be entitled to all the privileges and representation provided herein for County societies, until such counties may be organized separately.

Sec. 8. It shall have authority to appoint committees for special purposes from its own membership, or from among members of the Association who are not members of the House of Delegates; and such committees may report to the House of Delegates in person, and may participate in the debate thereon.

CHAPTER V

Election of Officers

Section 1. All elections shall be by ballot, and the majority of the votes cast shall be necessary to elect.

Sec. 2. On the first day of the Annual Session the Delegates from each of the three grand divisions shall select three Delegates from their respective divisions, to serve as a Committee on Nominations, no two of whom shall be from the same county. It shall be the duty of this committee to consult with other members in selecting candidates for the officers, and to hold one or more meetings, at which the best interests of the Association and of the profession of the state for the ensuing year shall be carefully considered. The committee shall report the result of its deliberations to the House of Delegates in the form of a ticket containing the names of three members for the office of President, all in the same grand division of the state from which the President is to be elected, and of one member for each of the other offices to be filled at that Annual Session, except the Councilors. (For list of officers and terms of election, see Constitution, Article VIII.)

Sec. 3. The Councilors shall be elected on the second day of the meeting after their report is made to the House of Delegates, so that they may reorganize and plan the year's work. Nominations may be made by the Nominating Committee or by any Delegate.

Sec. 4. The report of the Nominating Committee and the election of officers shall be the first order of business of the House of Delegates, after reading the minutes on the morning of the third day of the General Session, except the Councilors.

Sec. 5. Nothing in this article shall be construed to prevent additional nominations being made by members of the House of Delegates.

Sec. 6. In balloting for the nominees for president, if on the first ballot no one receives a majority of the votes cast, the name receiving the smallest number of votes shall be dropped, and the balloting shall proceed in this manner until an election is had.

CHAPTER VI

Duties of Officers

Section 1. The President shall preside at all meetings of the Association, shall appoint all members of committees not otherwise provided for, shall deliver an annual address at such time as may be arranged, shall give a deciding vote in case of a tie, and shall perform such other duties as custom and parliamentary usage may require. He shall be the real head of the profession of the state during his term of office, and, as far as practicable, shall visit by appointment the various sections of the state and assist the Councilors in building up the County Societies and in making their work more practical and useful. When installed into office he shall announce new members of such committees as have not been elected by the House of Delegates.

Sec. 2. The Vice-President shall assist the President in the discharge of his duties. In the event of his death, resignation, or removal, the Vice-President to succeed him shall be from the same grand division of the state.

Sec. 3. The Treasurer shall give bond for the trust reposed in him, for such amount as the other Trustees may name, said bond to be made by regular bonding company, and paid for by the Association. He shall demand and receive all funds due the Association, together with bequests and donations. All funds shall be deposited in a national bank. He shall pay money out of the treasury on bills certified to by the Secretary of the Association only; he shall subject his accounts to such examination as the House of Delegates may order; he shall annually render an account of his doings and of the state of the funds in his hands; he shall charge upon his books the assessment against each component County Society at the end of the fiscal year; he shall collect and make proper credits for the same and perform such other duties as may be assigned to him. The compensation of the Treasurer shall be \$100.00 per annum as an honorarium.

Sec. 4. The Secretary, acting with the Committee on Scientific Work, shall prepare and issue the programs for and attend the meetings of the Association, and of the House of Delegates, and he shall keep minutes, or cause them to be kept, of their respective proceedings. He shall be custodian of all record books and papers belonging to the Association, except such properly belonging to the Treasurer, the Council, the Sections and various Committees, and shall keep account of and promptly turn over to the Treasurer all funds of the Association which come into his hands; he shall provide for the registration of the members and Delegates at the Annual Session; and, upon request, shall transmit a copy of

this list to the American Medical Association. In so far as it is in his power, he shall use the printed matter, correspondence, and influence of his office to aid the Councilors in the organization and improvement of the County Societies, and in the extension of the power and usefulness of this Association. He shall conduct the official correspondence, notifying members of meetings, officers of their election, and committees of their appointment and duties. He shall act as Chairman of the Committee on Scientific Work. He shall be editor of the Journal of the Association, unless a special editor is otherwise provided, and shall discharge such duties as the Trustees may direct. He shall receive for his services the sum of fifteen hundred dollars (\$1,500.00) annually out of the funds of the Association.

Sec. 5. The Speaker of the House of Delegates shall preside over that body and perform the usual duties of such officer. He shall sign the minutes of its transactions when same have been read and approved by the House. In the event of his absence for any cause, the House of Delegates shall elect a Temporary Chairman for such time as it may choose.

Sec. 6. In the absence of the Secretary the House of Delegates may elect a Temporary Secretary.

Sec. 7. The Trustees shall direct the policy of the Journal and manage the finances of same, as directed by the House of Delegates.

CHAPTER VII

Council

Section 1. The Council shall hold meetings during the Annual Session of the Association, and at such other times as necessity may require, subject to the call of the Chairman or on petition of three Councilors. It shall meet after the election of Councilors on the second day of the Annual Session for the reorganization, and for the outlining of work for the ensuing year. At this meeting it shall elect a Chairman and a Secretary, and it shall keep a permanent record of its proceedings. Five Councilors shall constitute a quorum.

Sec. 2. Each Councilor shall be organizer, peacemaker, and censor for his district. He should visit each county in his district at least once a year for the purpose of organizing component societies where none exist, for inquiring into the condition of the profession, and for improving and increasing the zeal of the County Societies and their members; he shall make an annual report of his doings and of the condition of the profession of each county in his district to each Annual Session of the House of Delegates. The necessary traveling expenses incurred by such Councilor in the line of the duties herein imposed

may be allowed by the House of Delegates upon a properly itemized statement, but this shall not be construed to include his expense in attending the annual session of the Association.

Sec. 3. Collectively the Council shall be the Board of Consors of the Association. It shall consider all questions involving the rights and standing of members, whether in relation to other members, to component Societies, or to this Association. All questions of an ethical nature brought before the House of Delegates, or the General Meeting, shall be referred to the Council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members, or of a County Society upon which an appeal is taken from the decision of an individual Councilor. Its decision in all such cases shall be final. It shall make such report or recommendations to the House of Delegates as it deems to the best interest of the Association.

CHAPTER VIII

Committees

Section 1. The committees shall be as follows:

A Committee on Scientific Work.

A Committee on Public Policy and Legislation.

A Committee on Nominations.

A Committee on Medical Defense.

A Committee on Public Health.

A Committee on Cancer.

A Committee on Medical Education.

A Committee on Memoirs.

A Committee on Hospitals.

A Committee on Arrangements and such other committees as may be ordered by By-Laws or resolution, by the House of Delegates or the Scientific Assembly.

Sec. 2. The Committee on Scientific Work shall consist of three members, appointed by the President, of which the Secretary shall be a member, and Chairman, and shall determine the character and scope of the scientific proceedings of the Association for each Session, subject to the instructions of the House of Delegates, or of the Association or to the provisions of the Constitution and By-Laws. Thirty days previous to each Annual Session it shall prepare and issue a program announcing the order in which papers, discussions and other business shall be presented, which shall be adhered to by the Association as nearly as practicable.

Sec. 3. The Committee on Public Policy and Legislation shall consist of five members, three to be appointed by the President, and ex-officio the President and Secretary. Under the direction of the House of Delegates it shall represent the Association in securing and enforcing legislation in the interest of the public health and of scientific medicine. It shall keep in touch with professional and public opinion, shall endeavor to

shape legislation so as to secure the best results for the whole people, and shall utilize every organized influence of the profession to promote the general influence in local, state and national affairs and elections. Its work shall be done with the dignity becoming a great profession, and with that wisdom which shall make effective its power and influence. It shall have authority to be heard before the entire Association upon questions of great concern at such times as may be arranged during the Annual Session.

Section 4. The Committee on Nominations shall be appointed and perform its duties in accordance with the provisions of Chapter V, Sections 2, 3 and 4, of these By-Laws.

Sec. 5. The Committee on Medical Defense shall consist of three members, one from East, Middle and West Tennessee, to be elected for three years by the House of Delegates so arranged that one is elected each year, but a vacancy shall be filled for the unexpired term by the House of Delegates at any Annual Session. It shall be the duty of this committee to manage the defense of malpractice suits against members of the Association in good standing, who have paid the Defense Fee of such an amount as has been named by the House of Delegates, said defense to be covered only for the time for which the fee covered, only alleged malpractice suits shall be defended, and the Association shall not be liable for any judgment against the defendant, but only for reasonable fees of attorneys employed by the committee and for usual court costs incident to defense of the case. The committee shall have authority to make such rules and regulations in the conduct of their work as they deem to the best interest of the Association. The committee shall keep a careful record of all suits referred to it, and all expenses incurred, and make full report of its work to each Annual Meeting of the House of Delegates. The committee shall elect one of its members Chairman. All suits shall first be referred to the Chairman of the Committee. All bills incurred and verified to by the Chairman shall be transmitted through the Secretary of the Association and paid by the Treasurer. The Medical Defense Committee shall be furnished by the Treasurer a monthly statement of the financial status of the medical defense fund, or at any other time upon demand.

Sec. 6. The Public Health Committee shall be composed of as many members as the President may determine from year to year, and in accordance with the activities in Public Health matters. The members shall be those best qualified in health work and appointed by the President for one or more years. They shall report annually the activities, progress and needs in health matters in the state. It is desirable that they shall

have at least one practical paper or address presented to the General Session on the more interesting phases of health work in the state.

Sec. 7. The Committee on Cancer shall consist of as many members as the President may determine. This committee shall be appointed by the President for one year, and shall make an annual report to the House of Delegates.

Sec. 8. The Committee on Medical Education shall consist of as many members as the President may determine, and shall be appointed for a term of one year. The committee shall make a report annually to the House of Delegates.

Sec. 9. The Committee on Memoirs shall consist of five members to be appointed annually by the President, who shall name one member as Chairman, whose duty it shall be to make annual report to the House of Delegates.

Sec. 10. The Committee on Hospitals shall consist of seven members to be appointed by the President of the Association, who shall name one of the number Chairman. This committee shall make annual report to the House of Delegates.

Sec. 11. The Committee on Arrangements shall consist of such a number of the component society in which the Annual Session is to be held as that society may determine. It shall, by committees of its own selection, provide suitable accommodations for the meeting places of the Association, its Sections and the House of Delegates, and of their respective committees, and shall have general charge of all arrangements. Its Chairman shall report an outline of the arrangements to the Secretary for publication in the program, and shall make additional announcements during the session as occasion may require.

CHAPTER IX

Assessments and Expenditures

Section 1. An assessment of \$4.00 per capita on the active membership of the component societies is hereby made the annual dues of members and subscription to the Journal of this Association, provided the component society does not include in its Honorary Membership any physician residing within the state, and who is not a member of another County Society; and, provided, it only include in its Veteran list physicians who are seventy years of age or older, and who have been members of a component society five preceding years. No assessment is made for Associate, Veteran or Honorary Members, and no Journal is to be furnished them.

Sec. 2. The Secretary of each County Society shall forward a roster of all officers, a list of Delegates and members and a list of non-affiliated physicians of the county, also a list of members who have died during the year, to the Secre-

tary of this Association thirty days in advance of the Annual Session.

Sec. 3. The Treasurer of each County Society shall collect and forward to the Secretary of this Association the assessment of \$4.00 per capita for each member, except Associate, Veteran, or Honorary Members, not later than fifteen days before the opening of each Annual Session.

CHAPTER X

Rules of Conduct

The principals set forth in the Code of Ethics of the American Medical Association shall govern the conduct of members in their relations to each other and to the public.

CHAPTER XI

Rules of Order

The deliberations of this Association shall be governed by parliamentary usage as contained in Robert's "Rules of Order."

CHAPTER XII

County Societies

Section 1. All County Societies now in affiliation with the State Association, or those that may hereafter be organized in this state which have adopted principles of organization not in conflict with this Constitution and By-Laws, may, upon application to the House of Delegates receive a charter from and become a component part of this Association.

Sec. 2. Charters shall be issued only upon approval of the House of Delegates and shall be signed by the President and Secretary of this Association. The House of Delegates shall have authority to revoke the charter of any component County Society, whose actions are in conflict with the letter or spirit of this Constitution and By-Laws, or the Code of Ethics of the American Medical Association, upon recommendation of the Council.

Sec. 3. Each County Society shall judge of the qualifications of its own members; but as such societies are the only portals to this Association, and to the American Medical Association, every reputable and legally registered physician, who is practicing or who will agree to practice non-sectarian medicine, shall be entitled to membership. Before a charter is issued to any County Society, full and ample notice and opportunity shall be given to every such physician in the county to become a member.

Sec. 4. Only one component Medical Society shall be chartered in any county. When more than one County Society exists, friendly overtures and concessions shall be made, with the aid of the Councilor for the district, if necessary, and all of the members brought into one organization. In case of failure to unite, an appeal may be made

to the Council, which shall decide what action shall be taken.

Sec. 5. Any physician who may feel aggrieved by the action of the society in his county in refusing him membership, or in suspending or expelling him, shall have the right of appeal to the Council.

Sec. 6. In hearing appeals, the Council may admit oral or written evidence, as in its judgment will best and more fairly present the facts; but in the case of every appeal, both as a board and as individual Councilors in district and county work, efforts at conciliation and compromise should precede all such hearings.

Sec. 7. When a member in good standing in a component society moves to another county in the State, his name, upon request, and with the consent of his component society, shall be transferred, without cost, to the roster of the County Society in whose jurisdiction he moves.

Sec. 8. A physician living on or near a county line may hold his membership in that county most convenient for him to attend, on permission of the society in whose jurisdiction he resides, and with consent of his Councilor.

Sec. 9. Each County Society shall have general direction of the affairs of the profession in the county, and its influence shall be constantly exerted for bettering the scientific, moral and material condition of every physician in the county; and systematic effort shall be made by each member, and by the society as a whole, to increase the membership until it embraces every qualified physician in the county.

Sec. 10. Frequent meetings shall be encouraged, and the most attractive programs arranged that are possible. The younger members shall be especially encouraged to do post-graduate and

original research work, and to give the society the benefit of such labors. Official position and other preferments may be unstintingly given to such members.

Sec. 11. At some meeting in advance of the Annual Session of this Association, each component society shall elect a delegate or delegates to represent it in the House of Delegates of this Association, in the proportion of one delegate and one alternate to each fifty members or fraction thereof; and the secretary of the society shall send a list of such delegates to the Secretary of this Association at least ten days before the Annual Session.

Sec. 12. The Secretary of each County Society shall keep a roster of its members, and a list of the non-affiliated registered physicians of the county, in which shall be shown the full name, address, college and date of graduation, date of license to practice in this State, and such other information as may be deemed necessary. He shall furnish an official report containing such information, upon blanks supplied him for the purpose to the Secretary of this Association, thirty days in advance of each Annual Session. In keeping such a roster, the Secretary shall note any changes in the personnel of the profession, by death, or by removal to or from the county, and in making his annual report, he shall be certain to account for every physician who has lived in the county during the year.

CHAPTER XIII.

Amendments.

These By-Laws may be amended at any Annual Session by a majority vote of all the delegates present at that session, after the amendment has been made in writing and has been laid upon the table for one day.

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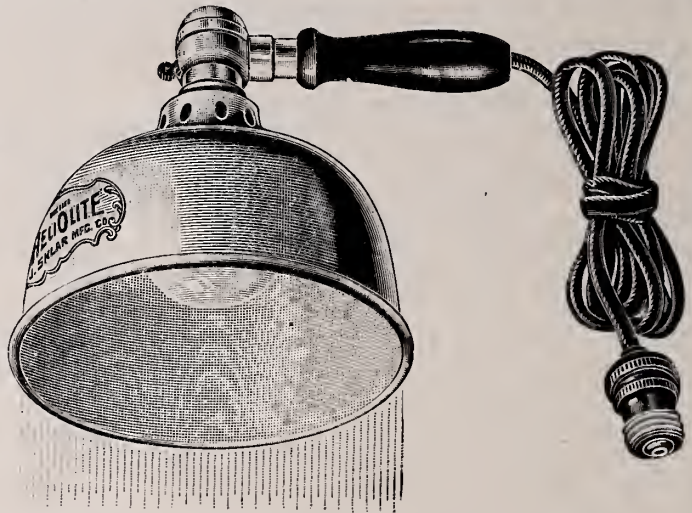
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ABDOMINAL PAIN*

BERNARD GASTON, M.D., Lebanon, Tenn.

PAIN is a prominent concomitant of most serious intra-abdominal conditions, and the proper interpretation of this symptom—its time of onset, its character, intensity, radiation, etc., is of great value in arriving at a correct diagnosis of the pathology producing it.

Its intensity is often proportionate to the seriousness of the disease producing it and is nature's warning that something has gone wrong within.

It is one thing to be able to give accurately the symptoms of a disease and quite another thing to pick out from a multiplicity of symptoms, represented by the individual patient, the disease producing the symptoms. The correct interpretation of abdominal pain is of more importance in abdominal diagnosis than any other symptom taken singly—and the realization of this fact is the justification of this paper.

The term "colic," like "rheumatism" has served in the past to cover a multitude of ill-defined and poorly understood complaints. It fails to carry a definite idea of pathology, just as do the terms "fever" and "insanity." It demands no special amount of mental acumen to say correctly

that a person is insane but it means a great deal, from the standpoint of treatment and prognosis to be able to singleshot the proposition and say that the patient has "dementia praecox," "paresis," "paranoia," etc. The term "colic" is also being restricted in its application, and we now speak of "renal colic," "biliary colic," "appendicular colic"—meaning, by them, well understood manifestations of distinct pathologic entities.

It would seem puerile to most of you gentlemen to state that "acute indigestion" is no longer regarded as a cause of severe abdominal symptoms, still we all see a number of patients, each year, in serious condition because it was assumed in the beginning that some food had upset the alimentary canal. I would much prefer to have the men who refer abdominal surgery to me assume that food never causes symptoms severe enough to necessitate calling a physician, than to have them, even occasionally, attribute the intestinal upset to "indigestion." Food poisoning is, of course, occasionally seen, but usually there are several sick from eating the same food and much other evidence points to some particular food as the cause of the trouble.

Abdominal pain presents itself to us

*Read before the Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

under three headings: (1) The pain complained of by the patient (subjective). (2) The pain produced by pinching the skin over the abdomen—the visceromotor reflex. (3) The pain produced by deep pressure-tenderness or pressure pain.

The visceromotor reflex called cutaneous hyperalgesia—stressed as of great aid in diagnosis by the English surgeons—will not be taken up in this paper, further than to say that its lack of status with American surgeons is, at least, partially due to their lack of familiarity with the minute nerve supply to the abdominal wall and to the abdominal viscera.

A *sine qua non* to the proper interpretation of subjective pain is a rather intimate familiarity with this nerve supply.

It is generally admitted that the abdominal viscera, themselves, are insensitive to pain and touch and the early pain complained of in disease of these organs is not felt at the site of the pathology, but is referred to the abdominal wall over the spinal nerve from the segment in the cord with which the particular viscus is connected by its sympathetic nerve supply. To put it a little more concisely—the abdominal wall is supplied by the lower six thoracic nerves, which are connected at their origin in the spinal cord with the sympathetic nerves that supply the abdominal viscera. In other words the spinal segments are receiving stations. The afferent impulses originate in the sympathetic and these impulses are in turn distributed to the abdominal wall via the six lower dorsal nerves.

We occasionally see the pain referred to the opposite side of the body from where the pathology is located. The anatomical explanation of this phenomenon is not difficult when we remember that the nerves which pass to the side on which the pain is referred, come off from the same segment of the spinal cord as that to which the nerves come from the affected part; the most striking illustration of this is seen in renal disease, where we not infrequently get pain on the opposite side from that in which the affected organ is situated.

It is further to be remembered that these

spinal nerves have lateral and posterior branches so that in some cases the pain will be referred to the back or to the sides as well as to the midline anteriorly and sometimes instead of to this location.

The "shoulder tip" pain of liver and gall bladder origin is of this reflex type. The phrenic nerve which supplies the liver and the diaphragm arises from the third, fourth and fifth cervical nerves and connects with the cervical sympathetic. The superficial cervical nerves which supply the outer and anterior aspects of the shoulder, arise at the same level on the spinal cord—namely, the third, fourth and fifth cervical segments, and it is along these nerves that the pain is referred to the shoulder tip.

It is manifestly impracticable to take up in a paper of this character all the pains which originate in the abdomen, and I shall confine the rest of my time to the pains which accompany the severe abdominal lesions usually met with in practice.

The classification of abdominal crises suggested by Mr. Arthur Burgess in his Hunterian Lecture before the Royal College of Surgeons has been of much value to me both at the bedside and in the preparation of this paper. His classification is as follows:

- (1) The colics.
- (2) The perforations.
- (3) The hemorrhages.
- (4) The inflammations.
- (5) The obstructions.

While this classification will embrace the vast majority of conditions producing abdominal pain, I know of no rule or set of rules by which one could diagnose all intra-abdominal conditions producing pain before operation or even post-mortem.

Mr. Burgess reminds us "that the early symptoms in them all may be identical, since they depend upon the same cause—a shock to the solar plexus, evidenced clinically by pain referred to the midline of the abdominal wall, vomiting, and shock. These symptoms have long been described by Sir Frederick Treves under the term 'peritonism,' and are of no value in differential diagnosis, since they may be pres-

ent whatever the nature or wherever the situation of the lesion, provided, only, that it be of sufficient intensity to stimulate the solar plexus, directly or indirectly."

The pain in choice is characterized by:

- (1) Its suddenness of onset.
- (2) Its sudden cessation.
- (3) Its tendency to recurrence.

The pain in colic has a characteristic radiation. In renal colic it begins in the loins, shoots down toward the groin, inner aspect of the thigh and to the testicle. There is often distinct tenderness of the testicle on the same side, for the reason that it receives its nerve supply from the same spinal segment that the kidney does. Increased frequency of urination is strong corroborating evidence, and if in addition there is blood in the urine a move for "peremptory instructions" is in order.

The reflex pain of biliary colic to the angle of the scapula and to the shoulder tip has been explained.

In intestinal colic the pain is felt all over the abdomen and it is impossible to draw any hard and fast line between the seat and character of the pains produced in diseases of the small and large intestine, respectively. The wide distribution of this pain is easily explained on the ground that the large and small intestines are supplied by the superior mesenteric plexus and it follows that referred pain, whether from the jejunum or colon, must be located at the same place. The length of the small intestine and the way in which the loops intermingle and overlap prevent accurate localization. However, McKinzie found that violent pain originating in the small intestine is never felt below the umbilical region and when the pain extended to the hypo-gastric region, then the obstruction was found in some part of the large intestine.

The pain of perforation is characterized by its extreme suddenness of onset and intensity and by the early development of shock, involuntary muscular rigidity and, perhaps, obliteration of liver dullness due to free gas in the abdominal cavity. Some light may be thrown on the location of the

perforation by the history of the case. For example: indigestion, appendicitis, or typhoid. But valuable time should not be wasted as the symptoms and physical signs are definite enough to make exploration imperative.

There is nothing especially characteristic about the pain that accompanies hemorrhage into the peritoneal cavity except that there is a tendency on the part of the patient to faint which must be due to the pain and not to the loss of blood because it comes on before any considerable quantity of blood can be poured out. Just what is the cause of this pain I am unable to state, since it seems fairly well established that blood is not irritating to the peritoneum, which is conclusively demonstrated by the soft pliable abdominal wall seen in the early hours after an ectopic has ruptured. The general signs of loss of blood, namely increasing pulse rate, pallor of the skin and mucus membranes and restlessness, must be relied upon in establishing the diagnosis in this class of abdominal catastrophes.

The main characteristic of the pain of inflammation is that "it does not reach its acme in the first few minutes of the attack as in the colics and in the perforations, but steadily rises to its maximum in a period which may be as long as several hours. Thus a patient who feels perfectly well one minute and is in violent agony the next, is suffering from some other type of crisis than an abdominal inflammation, and the recollection of this point would have prevented many errors in the diagnosis of acute appendicitis from other crisis." Burgess.

The subjective pain felt early in an attack of appendicitis is not felt in the right iliac fossa but in the epigastrium at the peripheral distribution of the eighth, ninth, tenth and eleventh spinal nerves. In fact, a pain which originates in the right iliac fossa is extremely unlikely to be appendicitis. The subjective pain is not felt in this region till the parietal peritoneum becomes involved in the inflammatory process. This may be

late in manifesting itself and even absent in some cases. An appendix deeply placed, perhaps retro-caecal, may even go on to rupture without ever showing definite pain or tenderness over its location in the abdomen. On the other hand in cases of acute appendicitis, when pain and tenderness manifest themselves early in the right iliac fossa and are of extreme severity, one may confidently expect to find the appendix near the parietal peritoneum and offering no difficulty in its removal.

The pain felt in intestinal obstruction has already been described. Persistent vomiting should arouse grave suspicion of intestinal obstruction and if in addition repeated enemata fail to cause the passage of gas and there is progressive abdominal distention, the diagnosis is practically completed.

There is always the possibility of confusing acute intra-thoracic disease—especially basal pneumonia, diaphragmatic pleurisy, and acute pericarditis—with the acute intra-abdominal crisis. Most surgeons of experience have opened the abdomen expecting to find intra-abdominal pathology, only to find the abdominal viscera normal, and twenty-four to forty-eight hours later find their patient with a well defined pneumonia. In intra-thoracic disease the respiration is out of all proportion to the pulse rate and the temperature in the early stages is too high for intra-abdominal disease. The abdominal rigidity is said to be of the voluntary rather than the involuntary type and there are other signs that should steer one clear of such serious mistakes.

The crisis of locomotor ataxia must very carefully watched for and where there is any suggestion of syphilis a very careful examination should be made.

I shall close this paper with a quotation from Mr. Burgess' paper previously referred to. "Surgical technique has now reached such a high level of efficiency that further improvement therein can not be relied on to better the statistical results of the surgical treatment of the acute abdominal crisis. Such can be obtained only

by earlier diagnosis on the part of the general practitioners permitting the application of such treatment at an earlier stage. The time that has elapsed between the time of onset of the attack and the opening of the abdomen is the real deciding factor in the ultimate issue of the case, far more so than the skill of the individual surgeon. Do not spend too much time in making an elaborate diagnosis. Content yourself with recognizing that a grave lesion has occurred which is far more likely to recover if surgically treated. I believe that I speak for all surgeons when I say that I much prefer to meet in consultation a practitioner, whose diagnosis made in the early hours of the attack, is limited to 'something gone wrong in the belly' than him who forty-eight hours later can give a cut-and-dried and possibly perfectly correct description of what an operation will reveal."

DISCUSSION

DR. ROBERT CALDWELL, Nashville: This is too important a paper to go without discussion and I think we should hear from the men who first see these cases. They should tell us a good deal about these abdominal pains. The doctor's paper is excellent and we should have some discussion from a practical standpoint. He has described the nerve distribution and the reason of the pain, but let us hear from the others about these pains, for the history of these abdominal pains is very illuminating if we will study them. We must not only consider that the patient has pain, but the type and character of the pain, whether it is persistent, whether it was sudden or gradual in onset, as well as the location, which the doctor referred to. For instance, pain in appendicitis. This pain is never sudden in its onset unless we have a rupture of the appendix. The patient will say, "I woke up last night with a pain, not severe, and I waited several hours before calling a doctor." The pain of gall-bladder trouble is more sudden, because it is due to a spasm of the muscular layer of this gall-bladder.

DR. MURRAY B. DAVIS, Nashville: The doctor spoke of the abdominal rigidity sometimes seen in pneumonia cases. There is one diagnostic sign that has been of great assistance to me. Vale, of Detroit, says if the lesion is intra-thoracic, the abdominal rigidity softens up at the end of expiration, whereas if the lesion is intra-peritoneal, the abdominal rigidity is constant,

that is, it is not affected by the respiratory excursions. This has been of great value to me and I wish to know if others have noticed this sign.

DR. W. K. SHEDDAN, Columbia: The statement that pain in appendicitis is never of sudden onset is very dogmatic and does not agree with my experience. I do not see much appendicitis myself, but I have never seen a case in a young child that did not come on suddenly. The pain is intense and is followed by vomiting. It has been my experience, especially in young people, that the pain is sudden and very intense. We frequently get a history of sudden, intense pain, with vomiting, and then the patients have complete relief from pain. There is no hard and fast rule about this sort of thing. Of course, we are more apt to get the sudden, acute pain in intestinal obstruction. This is particularly true in cases of volvulus. We have some acute pains in the abdomen, and if you will study the vegetative nervous system and know their origin you can understand these things. In this class of cases you do not get the rise of temperature, but you can get the rapid pulse and the other evidences of acute inflammatory conditions. I have seen twenty-five or thirty operations done in the last three years for acute appendicitis, and I have seen the operation done with every set of symptoms you can think of. I think there is no need of this. The time has come when we should tell the surgeon what he should know about the diagnosis of such conditions instead of the surgeon telling the general practitioner. In the thirty operations I spoke of, in only five of them was there anything the matter with the appendix. The general practitioner won't overlook that many cases. I wonder sometimes what the surgeons make their diagnosis on. I have gone to a little hospital in Columbia four times during the past three years, twice with the patient on the operating table, and have said there was nothing the matter with the appendix. In these cases the family would not permit an operation until I said the patient should have it. In another instance the patient was ready for the operation but was not on the table, and they did not go any further. None of these cases have been operated yet. I think the diagnosis of intra-abdominal conditions should be made by the surgeon instead of telling the general practitioner what he should know. I remember hearing a friend of mine in Philadelphia many years ago say that he had crossed the Allegheny mountains many times on the call of his old friends, the general practitioners, and on diagnoses made by them, and very seldom needed to make a careful examination.

DR. E. T. NEWELL, Chattanooga: I have enjoyed this paper very much. As Dr. Caldwell said, it is very timely and a very important sub-

ject, but we cannot make our diagnosis on pain entirely. Dr. Sheddan said the internal medicine man should tell the surgeon something. We would be very glad to hear more from him. He does tell us a good many important things and we listen very attentively to him. We realize that the man who first sees the patient, before a chain of symptoms have developed, can tell much more about the condition *per se* than the surgeon who sees the patient later, when a multiplicity of symptoms are present.

I wish we did know more about pain and its localization, as suggested by the essayist. The paper brought out some good points, especially about referred pain; from the central and sympathetic nervous systems; but we often have to use other practical points in making a diagnosis. We not only try to make a diagnosis by the localized pain and the "referred," but we have to take into consideration the amount of pain, the volume of the pain. We need the blood count and the stethoscope. In the cases of pneumonia, where the belly is opened, if the doctor had used a stethoscope and made a blood count, finding about 30,000 leukocytes, which is usual in pneumonia, but which is seldom present in an abdominal condition, the correct diagnosis would have been made.

In pain from the rupture of internal organ, the intestine, the gall bladder or stomach there is always the board like rigidity. This has been of more assistance to me than anything else in making a diagnosis in these conditions. I think, in the cases of kidney colic, it is very usual to have the referred pain running around as a girdle pain down in the groin and in the scrotum, localizing itself in the scrotum and glans penis, but we cannot rely on this entirely. We must see if there is blood in the urine, microscopic or macroscopic, and then take x-ray pictures to see if we cannot find the stone itself.

This paper was very illuminating and brought out many points regarding pain and its localization, but I do not think we will ever be able to absolutely diagnose intra-abdominal conditions by the pain alone.

DR. FRANK WARD SMYTHE, Memphis: I enjoyed the paper very much and wish to spend only a moment on one or two points that were mentioned in the paper and discussions.

First, in reference to the sign in pneumonia. I have found that the abdominal pain in pneumonia is usually superficial, as the doctor has said, and that it is not found on deep pressure. However, we always examine the heart and chest in all our cases before we do the abdomen, and there are very few cases of pneumonia in which we have not found the pneumonia in the lung before we examine the abdomen. We examine the lungs most carefully in all patients complaining of abdominal pain.

Another point to bear in mind is that patients with colic toss and twist about, while those with inflammatory conditions and perforations lie still and do not change their position. In acute appendicitis in an adult the pain usually starts in the epigastrium. In the man or woman of an age where they can locate pain, this is usually so. In the case of a child he usually says the whole stomach hurts, therefore this history is not so valuable in the child as in the adult. With an abdominal pain starting low down on the right side in an adult, I am always suspicious that it may not be appendicitis.

Shock was mentioned as being found in the early cases of visceral rupture. In these early cases of ruptured ulcer and appendices we do not find shock. True, the patients complain of great pain and there is board-like rigidity of the abdomen; however, the pulse is regular, the blood pressure is not materially lowered, and there are no signs of collapse, symptoms which we always find in shock.

However, we do find shock in two emergency conditions of the abdomen. These are acute pancreatitis and cases with sudden and enormous hemorrhage from any cause.

The high mortality in these cases of acute surgical abdomens is due to procrastination in bringing them to the surgeon. It is my belief that every acute, severe abdominal pain, accompanied with board-like rigidity, warrants an exploration.

DR. A. L. RULE, Knoxville: I know of no condition that is more liable to be misinterpreted than acute pain in the abdomen, and I am surprised at how little has been said about a proper history in these cases. To me that is one of the most important factors that a doctor has to contend with. The history is almost perfect in acute, abdominal pain. With a history of previous attacks many times we can get a definite idea of what we have. Take, for instance, the pain due to nephritis colic. Sometimes the pains are sharp and shooting, sometimes dull and aching, sometimes they are referred. They are dependent largely upon the type of stone. If there is a rugged stone there is more pain than if there is a smooth stone, and often it is not referred. In the cases with sharp stones the pain is invariably referred. There may be bleeding and there may not. It cannot be depended upon as a symptom.

I wish to speak especially in reference to acute appendicitis. In these cases we almost invariably get a history of previous attacks. The amount of pain in this malady depends upon the location of the appendix. If the appendix reaches over into the pelvic region, away from the peritoneal structure, we have very little pain. There may even be a gangrenous, ruptured appendix without pain, so I want to stress, gentlemen, the importance of a proper history in all these cases of pain in the abdomen.

DR. J. C. WILSON, Rookwood: There are a few points in reference to pain that have not

yet been brought out. One is that the pain in appendicitis is almost invariably referred to the upper part of the abdominal cavity, while the pain from other abdominal conditions is referred downward. The pain from gall-stone colic, from kidney colic and from ulcer of the stomach and duodenum is always referred down. This is a very important point. I have never seen it fail that the pain from appendicitis goes upward and over to the left, while every other type of pain is referred down.

Aside from this I wish to refer to the point Dr. Sheddan brought out, namely, that I have seen a great many abdomens opened and I think fully 90 per cent of the appendices are diseased more or less. I believe the practice of taking out the appendix is a good one, whatever its condition may be. If they have not appendicitis at the time, they more than likely will have it later in life.

DR. BERNARD GASTON, Lebanon (closing): I wish to thank all of the gentlemen for the discussion of my paper. I can concur in all that has been so well said, except in reference to the letting up at the end of expiration of the abdominal rigidity that has been referred to. I have never been able to interpret that sign very helpfully, in children particularly, but it is probably my own fault. I have tried to use it, but it has not been very satisfactory.

I do not know what to say about Dr. Sheddan's attack on us for taking out the appendix needlessly. I do a fair amount of surgery and a fair amount of the cases are appendicitis. I can truthfully say that I have not opened up a case that was supposed to be appendicitis in the last three years that was not definitely proved to be appendicitis. I think it is incumbent on the surgeon to take a stand that will put us in the right light regarding the necessity for operating in appendicitis. I think the tendency is to operate too seldom rather than too often. I am perfectly willing to operate on a patient occasionally who does not prove to have appendicitis in order to catch the patient who does have it and save him from the trouble that comes from the delayed operation. I would much prefer to have my abdomen opened on the suspicion of appendicitis than to have delay in a suspicious case.

I agree with Dr. Newell that it is very difficult to confine oneself to "pain" in the diagnosis, but I tried to stay away from every other feature and limit myself to "pain" in the paper. Of course, we would not undertake to limit ourselves in any case to the pain alone. All the other methods of diagnosis would be employed, but I tried to limit my paper to the title of it.

Dr. Smythe spoke of patients with rupture of the various abdominal viscera not showing shock. These ruptures are followed by shock, but the shock has a tendency to spontaneously clear up. If one sees such a patient an hour or so after the rupture the shock has cleared up and aside from the abdominal rigidity there is nothing perhaps to indicate the perforation of a viscus.

AN EPIDEMIC OF ACUTE PLEURODYNIA IN TENNESSEE

R. B. Wood, M.D., Knoxville

THE large number of people seen during the months of June and July, 1924, in the city of Knoxville, and because of the reports of other physicians here and nearby towns of similar numbers, complaining of a sudden acute pain in epigastric region and around the costal border, especially severe on attempted deep inspiration, makes it desirable to add an account of this epidemic to those recently reported.

A recent report of cases similar to those seen here has been made by R. G. Torrey of the Philadelphia General Hospital (1) who gives a brief review of the literature covering epidemics with similar clinical findings.

Attention was first called to this infection by W. C. Dabney who in 1888 published an article describing the above condition under the name of "Devil's Grip," and differentiated it from dengue fever and malaria.

The next appearance of this malady was in the same locality in Virginia in 1923 and reported to the State Board of Health by Doctor Maude M. Kelly. (2).

Reports of this outbreak were made by Payne and Armstrong. (3). In the September issue of the Journal A. M. A., Hanger, McCoy and Frantz report "An epidemic of mild fever of unknown nature," and are apparently describing the same condition occurring in the state of New York. At the same time the epidemic in Virginia was growing to such an extent that investigation was undertaken by the State Board of Health.

Perusal of the above literature will reveal the close similarity in clinical and laboratory findings of each outbreak, though as expected they vary at times. However, the chief symptoms apparently spring from the diaphragm in each out-

break and the difference in clinical findings varies slightly in other ways.

The summary of these reports can be given in the words of Hanger (3) in his opening paragraph, who states the characteristic features are:

- 1 Occurrence in young.
- 2 Sudden onset.
- 3 Pain referred to chest or upper abdomen.
- 4 Rather high fever with few other general constitutional symptoms.
- 5 Disappearance of pain and fever in twenty-four hours; frequent recurrence on third or fourth day after onset.
- 6 Speedy and uncomplicated recovery.

Payne and Armstrong's description stresses the frequent occurrence of diarrhoea and the abdominal distress with a somewhat slower recovery, thus somewhat differing from the other writers. He also stresses the acute invasion and calls attention to the similarity of the infection to food poisoning and occasionally to dengue fever.

The laboratory findings of all workers mentioned above agreed in most instances. The majority of cases studied presented only a moderate or no rise in total white count, some with an increase in the polynuclears others with a decrease of polys and a rise in the large lymphocyte. During recovery a rise in the eosinophiles was noted. Blood cultures and Widal reactions were consistently negative. Urinalysis revealed the occasional presence of red blood cells which disappeared during convalescence.

Torrey's (1) description corresponds to those preceding but called particular attention to the temperature curve which shows an elevation on first and third day, there being a return to normal in the interval. The patients were apparently nor-

mal in every respect during the second day and on the third in many instances repeating the chill, fever, etc., of the first. Small (4) working in the laboratory of the Philadelphia General Hospital with Torrey, reports the presence of a plasmodium recovered from the blood stream and possessing the staining properties similar to the plasmodium malariae. Torrey evidently accepts the "plasmodium pleurodyniae" of Small and finds its acceptance easy because the symptoms are easily controlled by the cinchona group.

The cases seen by the writer and those reported by local and nearby physicians conform to the clinical group described previously but apparently fall into two groups: (1) Those presenting respiratory disorder and (2) Those with abdominal symptoms.

Onset—The onset was usually sudden though in few cases it was gradual and preceded by headache, cramp like pains in epigastric region radiating around the costal margins. The pain varied in intensity from a simple "stitch in the side" that did not necessitate medical attention, to a severe vise-like intensity that prevented deep inspiration. The respiratory rate varied with the intensity of the pain, the temperature and age of the patient. The onset in addition to the pleuritic pain was accompanied frequently by pains in lower thoracic region posteriorly and in one or both shoulders. Headache was frequent as was general aching. This was noticed more often in those with pain above the diaphragm.

Those with pain confined to epigastric region complained of "gas" or distension but this was more apparent than real. Gaseous distension was present more frequently in children than adults, for the abdominal group seemed to occur more often in those of younger age, the picture often resembling early acute obstruction.

Another occasional complaint in these patients was that of sore throat which apparently was confined to the pharynx. It was equally present in adults and children.

Chills followed by fever and sweats was

noted in the respiratory group, as in the former cases reported there was a tendency for a recurrence of symptoms about the third day, although they were seldom as severe as those of the onset. In many instances there were no return of symptoms after the first day but here again this was most noticeable in those presenting respiratory symptoms. The abdominal group, whose symptoms were more often less severe, seemed the more difficult to relieve and a longer period of time elapsed before convalescence was established. Constipation often followed by diarrhoea, perhaps induced by medication, was also noticed in this group. Recovery in almost every instance was established by the fifth to sixth day.

Sex, age and occupation seemed to have played no role in the etiology, except more cases seen were in children. However a sufficient number of adults were afflicted to lead one to believe that age played no part as an etiological factor. At times only one case in a house occurred, while again two or three might be present at the same time.

Physical Examination—Some of these patients appeared actually ill, others not; the former being in that group having marked pain in the chest or epigastrium. The face was often flushed and showing distress. Temperature varied from normal in few cases to 103, although those with normal temperature when seen believed they had shown elevations previous to time visited. The pulse rarely returned to normal on the second day even though the temperature reached the basal line.

The eyes externally revealed no evidence of disease other than an occasional inequality of the pupils which can be explained through the sympathetic reflex. There was present in many cases a general redness of the pharynx which gave rise to complaints by a few patients. The tonsils apparently were not the seat of any trouble.

The chest presented during acute attack limited expansion, and breath sounds were short, no rales or pleuritic rubs were heard either during or after the acuteness had

subsided. Study of the excursion of the diaphragm under the flourescope was not made. The heart was apparently negative, except for its increased rate.

Abdomen—The musculature of the upper abdomen was tense in all types, but under constant and gentle pressure it would relax. Epigastric tenderness was present, but never severe. In the so-called abdominal group, reflexes were absent in the majority of cases.

No bone or joint complications were noted in any case.

Neurological examination was negative except for the occasional inequality of pupils, absent epigastric reflexes and knee jerk. The later was very inconstant and no importance was attached to its absence when noted.

Laboratory Findings—The laboratory reports were essentially negative so far as any pathognomic findings were concerned. They were of some value in ruling out acute pulmonary or abdominal conditions. The total white count was rarely elevated above 9,000, and the increase was due to the large lymphocyte group. Polymorphonuclears were more frequently decreased and the eosinophiles as reported by Payne and Armstrong were increased slightly. The red cells were apparently not disturbed and the writer was unable to confirm results of Small in finding a plasmodium.

Cultures of blood were negative as were agglutination tests with *B. typhosus* and *B. paratyphosus* A. and B.

Urinalysis were essentially negative except for traces of albumin seen after any febrile condition. Smears from the throat of those with symptoms referable to that region revealed no organisms not normally present.

Case 1. H. M., age 19. Was seen July 4, 1925, at 9:30 p.m. Complained of severe pain in "pit of stomach," which was described as "vise-like in character" and radiated around left costal margin and upward to precordial region. Slight tingling was noted in fingers of left hand. Pain was of such severity as to prevent deep inspirations and patient complained of feeling of "fullness in stomach." He had noticed slight discomfort in upper abdomen about five hours before onset of acute symptoms.

Physical Examination: Patient was a well-nourished white male sitting up in bed, respiration 34 per minute, and shallow. Temperature 100, pulse 98. Pupils equal, reacting, and eyes otherwise negative.

Throat: Slight redness of pharynx; tonsils appearing normal.

Chest: Symmetrical, expansion limited, and no rales or rub heard.

Heart: Normal in size, position and rhythm. No murmurs or friction sound heard. Rate 98.

Abdomen: Tense, slight tenderness to deep pressure over epigastric region. Rigidity subsided with relief from pain.

Examination otherwise negative.

Laboratory findings: W. B. C. 7,400, Polys 56%, L. Lym. 32, S. Lym. 8%, Trans 2, Eosin 2. No abnormalities of R. B. cells noted and no protozoan seen. Urinalysis negative.

On the following day the patient was up during the forenoon and about 4:30 p.m. noticed discomfort in epigastric region and left side, but suffered no severe pain as on previous day. Temperature at this time normal but pulse rate was 96. Respirations 20 and without pain, perhaps influenced by adhesive strapping and medication; no rub or rales heard on auscultation. Patient made uneventful recovery.

Case 2. Mrs. V. V., female, age 22, housewife. Seen June 2, 1925, complaining of dizziness. Headache and fullness in epigastric region and backache about 8-12 dorsal region. Duration three days, onset being initiated with chill, but has had none since onset. Has no actual pain on deep inspiration, but feels uncomfortable. No concurrent G. U. symptom. At beginning of illness was constipated, but now having a slight diarrhea.

Physical Examination: Temperature 103½, P. 120, R. 24. Examination revealed no abnormality about E. E. N. T. Heart negative and no abnormal chest findings on auscultation.

Abdomen: There was marked epigastric tenderness which extended along left costal margin and accompanied by rigidity of upper abdominal muscles of left side.

No other abnormal findings were noted in physical examination.

Laboratory: W. B. C. 5,400, Polys. 74%, Lymph. 22%, Eosin. 3, Trans. 1. Blood smears negative. Blood culture negative and agglutination for *B. Typhosus*. Para *Typhosus* A. and B. were negative.

Urinalysis negative, except slight trace of albumen with heat and acetic acid test.

On the following day temperature did not rise above normal and the pulse gradually reached normal line, although patient did not sense a feeling of well being until about the fifth day.

Discussion: The first case outlined above differs in no way from the cases heretofore described and called by various names of "devil's grip," "pleurodynia" and "diaphragmatic spasm."

The second case resembles those reported by Payne and Armstrong, but one should be slow in placing this group in the same class. The writer possesses some doubts as to their belonging to the same classifica-

tion, owing to the latter's resemblance to an ordinary intestinal infection, although the physical findings of tenderness about the margin of the ribs is somewhat different.

The onset of the abdominal group frequently resembles typhoid and in a city whose typhoid rate in 1924 was 34 per 100,000, one must consider this in the differential diagnosis for the first few days, especially when the blood pictures so closely resemble at times.

Perhaps the idea of an intestinal infection is influenced by the knowledge of the analysis of the city water supply which at this time disclosed the presence of an organism belonging to the colon group. That this played no factor as a causative agent can be concluded by the fact that cases outside the city of Knoxville were frequently reported.

The belief that both of these conditions fell into one group is justified when a study of the seat of pathology is made. The diaphragm is innervated by both the phrenic and the intercostal nerves, the former chiefly supplying the crura, the latter the costal portions (5), while the supply of the peritoneal surface comes from "fibers that course with the intercostal nerves" (IV to XII), and go to the celiac plexus. From the above facts it can be deduced that path-

ology of an acute nature in the upper abdomen or chest might initiate diaphragmatic spasm.

Hiccough which frequently accompanies diaphragmatic inflammation was encountered in no instance in this epidemic. No case resulted fatally and fortunately none to the writer's knowledge have been subjected to laparotomies.

Conclusions—(1) An epidemic of so-called acute pleurodynia occurred in Knoxville, Tenn., during June and July, 1925. The name given was taken from Hanger, McCoy and Frantz.

(2) The disease is infectious. The writer was unable to confirm to date the findings of Small in three closely observed cases, and reports from pathologists seeing other cases coincided with my own. All slides were stained with Wright's freshly made stain and distilled water was used instead of the acidulated water used by Wright.

(1) Torrey, R. G., M.D. *American Journal Medical Science*, October, 1924.

(2) Payne, Geo. C., M.D., and Armstrong, Chas., M.D. *Epidemic Transient Diaphragmatic Spasm. Journal of A. M. A.*, V. 81, No. 9, p. 746.

(3) Hanger, F. M., Jr., M.D., McCoy, C. C., M.D., and Frantz, A. N., M.D. "An Epidemic of Mild Fever of Unknown Nature." *Journal A. M. A.*, F. 81, No. 10, p. 826.

(4) Small, J. C. *A. M. Journal Med. Science*, October, 1924, p. 167.

(6) Pottenger, F. M. *Symptoms of Visceral Disease*, p. 171 and following.

ACUTE DELIRIUM

CHALMERS DEADRICK, M.D., Knoxville

ABOUT eighteen years ago I saw and treated my first case of "acute delirium, or Bell's mania."

I retired from practice in 1920, after a strenuous service of fifty years, but saw no other individual affected with "acute delirium."

The patient was J. B. S., white male, age 23; home, Knoxville, Tenn.

A few months before his illness he was called South to assist an older architect, who was compelled to stop work on account of sickness.

The patient was put in charge of an extensive public building. Complications occurred. The mental strain and little or no sleep were too heavy for him. His nerve forces broke down completely. Two attendants brought him to Knoxville. He was wildly delirious. We forced him to a taxi and to his home.

The doctor who treated him in the South sent no letter indicating his diagnosis or treatment.

Text books on the practice of medicine at that time gave brief description of the disease, and their prognosis was death; but I remembered having in my reading years since of a very remarkable, and prominent symptom, in acute delirium. "The pumping act": pumping with one or both arms.

The delirium was intensely wild. Recognizing the gravity of the case, Dr. J. M. Kennedy was called in consultation. We discussed the use of Abbott's hypodermic talbet, composed of morphine, hyocine and cactin. We were aware of the fact that some of the medical journals had criticised the combination, and warned their readers against its general use.

I agreed to be responsible for the effects, and we used tablet number one. A few

minutes later the patient was sleeping quietly and soundly. At the end of ten hours he opened his eyes and gazed about. To test his mental condition, I asked him a few questions. His answers manifested slight evidence of consciousness, and he resumed pumping with both arms. The injection was repeated and promptly followed by a quiet sleep of eight hours, and a marked improvement of his mental perception.

During the following thirty-six hours he had two hypos of tablet number two (one-half strength). His recovery was rapid and uneventful.

About one year later, during a taxing experience in nursing his father in a severe illness, he resisted my advice and warning, also appeals of the family, and had little or no sleep for a number of days and nights.

I happened to be present at the family breakfast table when he came in, stood at the door and gazed about the room as if dazed. I invited him to a seat at the table, but instead he muttered, looked wild and began pumping with one arm. I led him to his room, put him to bed, and injected the number one tablet, which was promptly followed by a long, quiet sleep. The following day I gave him a number two tablet which ended the case.

During the following ten years the patient enjoyed good health, but the family home was broken up by the death of both parents, a sister and two brothers. He took a room in town and in January, 1919, I was called to see him in a third attack. The delirium was even wilder than in the first illness. To get to him we were compelled to break the door lock. I used the usual number one tablet, which quieted his intense raving and delirium. We took him

to the Knoxville General Hospital and left him quietly sleeping. I urged the necessity of keeping him under the influence of the medicine.

I was called some hours later and found six attendants holding him in bed. The delirium was intensely wild and, of course, I promptly gave him the number one tablet with its invariable quiet effect.

The patient had raised such violent disturbance the superintendent of the hospital declined to keep him, and he was taken to

Dr. Goetz' Sanatorium, where after a few days he made a good recovery.

In July, 1922, a Knoxville physician 'phoned me that the patient was in the midst of another attack, and he wanted the name of the tablet I had used in his former attacks. Of course, I advised that he be put under the influence of the Abbott tablet. I did not see the patient in his last illness, having retired from practice two years before. A few days later I learned that he was taken to the Goetz Sanatorium and that he died there.

END RESULTS OF TONSILLECTOMIES AND ADENOIDECTOMIES*

D. HARBERT ANTHONY, M.D., Memphis.

TONSILLECTOMIES and the excision of adenoids for many years have been the most frequently performed operations in modern surgery about which so little follow-up has been reported. It is my purpose to show a few charts made up from my private cases operated on within the last four years ending December 31, 1924. A questionnaire was sent to 373 post-operative patients and 220 were returned.

Chart No. 1—Age

Under 1 year	3
1- 3 years	3
3- 5 years	14
5- 7 years	15
7-10 years	19
10-15 years	27
15-20 years	32
20-30 years	57
30-40 years	35
40-50 years	10
50-60 years	5
Total	220

Chart No. 2—Types of Tonsils

	Operated	Im-	Re-	Same	Worse
	On	proved	lieved		
Deep Tonsils	120	21	95	3	1
Pedunculated Tonsils	91	39	52	0	0
Secondary Tonsils	9	2	7	0	0

The deep type of tonsils I found to cause more systematic complication than the pedunculated type and the reason for this is because their position allows less drainage of the crypts on movement of the throat. If thin, purulent secretion is found by suction on repeated examination or by expression, I think this tonsil gives a higher per cent of relief than the pedunculated type.

Excision of adenoids was done on 102 of the above mentioned cases. General anesthesia (ether) was given to 125 of the above mentioned cases. Local anesthesia

(one per cent novocain) was given to the remaining ninety-five cases.

Questionnaire sent to each patient to get his opinion of the post-operative results:

Name _____ Address _____

1. I removed your tonsils and adenoids _____
Am trying to collect data on the results of my cases, and would appreciate your early assistance by answering the following questions:

• 1. Have you been relieved --- or benefited --- or are you unimproved --- of the chief complaint for which you had your tonsil and adenoid operation?

2. State whether your general health has been improved, is unimproved or is worse since operation?

3. Condition of your eyes since operation? ---

4. Condition of your ears since operation? ---

5. Condition of your nose since operation? ---

6. Condition of your throat since operation? ---

7. Condition of the glands in your neck since operation? -----

8. Did you have rheumatism before operation? ---
Have you had rheumatism since operation? --

9. Do you have recurrent colds in head as often since operation? -----

10. What was your weight before and after operation? -----

11. Please state in a general way your opinion of the result of your operation? -----

Chart No. 3—Question No. 1. Chief Complaints of 220 Cases
THROAT

	Re-	Im-		
	Same	lieved	proved	Worse
Recurrent Acute Tonsillitis	6	120	9	1
Recurrent Acute Pharyngitis	4	0	1	0
Peritonsillar Abscess	0	9	0	0
Chronic Tonsillitis	1	15	1	0
Vincent's Angina	0	6	0	0
Enlarged Cervical Glands	2	15	10	1
Chronic Laryngitis	1	2	0	0

Chart No. 4
EAR

	Re-	Im-		
	Same	lieved	proved	Worse
O. M. P. C.	4	10	1	0
O. M. P. A. (recurrent)	0	18	0	0
Deafness	10	0	3	1
Tinnitus	2	0	3	0
Vertigo	2	0	0	0
Chronic Mastoiditis	1	1	2	0

*Read before the Eye, Ear, Nose and Throat Section, Tennessee State Medical Meeting, April 21, 1925.

Chart No. 5

EYE				
	Same	Re-lieved	Im-proved	Worse
Optic Neuritis -----	0	2	0	0
Vitreous Opacities --	2	0	0	0
Retrabilbar Optic Neuritis -----	0	2	0	0
Corneal Ulcer (recurrent) -----	0	2	0	0
Choroiditis -----	3	0	0	0

Chart No. 6

NOSE				
	Same	Re-lieved	Im-proved	Worse
Recurrent Acute Rhinitis -----	0	4	5	0
Chronic Antrum ----	3	0	2	0
Chronic Ethmoiditis --	6	3	0	0
Sub-acute Ethmoiditis	0	10	0	9

Chart No. 7

MISCELLANEOUS CASES

	Same	Re-lieved	Im-proved	Worse
Chorea -----	0	0	1	0
Chronic Gastritis ---	0	8	0	0
Pyelitis -----	1	6	0	0
Pyelitis -----	1	6	0	0
Rheumatism -----	3	11	4	0
Dermatitis -----	0	2	0	0
Under Weight -----	1	10	4	0
High Blood Pressure --	2	5	2	0
Neuritis -----	0	0	1	0
Acute Nephritis ----	0	3	0	0
Goitre -----	0	0	3	0
T. B. Cervical Glands	0	0	1	0
Recurrent Acute Bronchitis -----	1	2	0	0

Chart No. 8

Question No. 2—State whether you general health has been improved --- is unimproved --- or is worse --- since operation?

General Health—Same, 28; improved, 192.

Question No. 3—Condition of your eyes since operation? Answers, 205; not answered, 15.

Eyes—Same, 172 (no change); relieved, 5; improved, 15; worse, 13.

Question No. 4—Condition of your ears since operation? Answers, 183; not answered, 37.

Ears—Same, 148 (no change); relieved, 5; improved, 25; worse, 5.

Question No. 5—Condition of your nose since operation? Answers, 188; not answered, 32.

Nose—Same, 146 (no change); relieved, 5; improved, 28; worse, 9.

Question No. 6—Condition of your throat since operation? Answers, 183; not answered, 37.

Throat—Same, 40 (no change); relieved, 60; improved, 79; worse, 4.

Question No. 7—Condition of glands in your neck since operation?

Glands—Total number enlarged before operation, 78; total number relieved of enlargement since operation, 32; total number enlargement developed since operation, 1.

Question No. 8—Did you have rheumatism before operation? --- Have you had rheumatism since operation? ---

Rheumatism—Total number rheumatic cases before operation, 26; total number rheumatic cases relieved since operation, 20.

Question No. 9—Do you have recurrent colds

in your head as often since operation? Answers, 171; not answered, 48.

Colds—Less colds, 145; same, 23; worse, 3.

Question No. 10—What was your weight before and after operation? Answers, 179; not answered, 41.

Weight—Same, 23; gained, 149; lost, 7; 1 lost weight caused by reducing by diet; 1 lost weight caused by recurrent pharyngitis; 2 lost weight by unknown cause; 1 lost weight in a healed pulmonary tuberculosis case; 1 lost weight caused by chorea (overweight); 1 lost weight caused by goitre.

Question No. 11—Please state in a general way your opinion of the result of your operation? Answers, 186; not answered, 34.

Opinion—Satisfactory, 172; same (not relieved), 16; worse, 0.

Complications

Total number of delayed hemorrhages within first twenty-four hours -----	4
Total number of secondary hemorrhages between fifth and eighth day -----	5
Total number of lung abscesses after general anesthesia -----	1
Total number of acute retro-pharyngeal abscesses after local anesthesia -----	1

The above delayed and secondary hemorrhages required ligation of a vessel in tonsil fossa.

Diagnosis of lung abscess was made on the seventh day after operation by physical examination and x-ray. Uneventful recovery without operation. Retro-pharyngeal abscess diagnosed on the fifth day after operation. Incision made in abscess and found to contain about two ounces of thick, purulent secretion.

Deaths Since Operation

One death occurred one year after operation caused by pneumonia.

One death occurred two years after operation caused by angina pectoris.

One death occurred two months after operation caused from sarcoma in the region of the hip joint.

One death occurred one year after operation caused from acute endo-carditis and pericarditis.

CONCLUSION:

1. From the above data I am inclined to believe that when the tonsil and adenoid is found sufficiently diseased and operation indicated the age is a minor factor as in any other modern surgical operation.

2. The submerged tonsil which causes the greatest amount of systemic absorption is found more often in the adult, which type of patient receives greater benefit from a tonsillectomy.

3. A well done adenoid and tonsil operation in children lessens to a marked de-

gree acute infection of the accessory nasal sinuses and middle ear infection.

4. The large per cent of relieved and improved chief complaints of post-operative adeno-tonsillectomies is very satisfactory.

DISCUSSION.

DR. W. W. POTTER, Knoxville: It is important to remember that the removal of tonsils and adenoids is not a panacea for all ills. Our patients do not always get relief from their troubles following the removal of tonsils for the simple reason that there may be other foci of infection. It is quite likely that a great many tonsils have been removed unnecessarily in the hope of clearing up some obscure or aggravating symptom, but I think it wise to always consider the tonsil in the process of elimination. It is never possible to say certainly and positively from casual examination that a tonsil is not diseased. We have a great many cases who have been cured of various ailments, such as rheumatism, quinsy, otitis media, iritis, neuritis, etc., by the removal of tonsils and adenoids, and everything considered, I am convinced that the results following this procedure will compare very favorably with those following other operations.

DR. T. E. GOYER, Jackson: I am of the opinion that we do remove almost too many tonsils and I do not think the throat men altogether are responsible, but I think the general man the tonsils would not be moved. The patients moved. If it were left entirely to the throat man the tonsils would not be moved. The patients are referred to us. I was amazed a few days ago when a very good man referred to me a patient with rheumatism with instructions to remove the tonsils. He had ordered the tonsils and all the patient's teeth removed, after which he was going to see if he could do anything for the rheumatism. He made no examination beforehand. As long as we have those cases and have to handle them that way, too many tonsils will be removed. Sometimes it is a little embarrassing if we do not remove the tonsils. Sometimes we think it is not the thing to do. I really think if the throat men would be a little more careful and be sure the tonsils needed removal, and if the general man, in referring the case would be sure there was some chance of the tonsils being the cause, then we would improve our post-operative results and the patients would be much better pleased with the operation.

DR. R. G. REAVES, Knoxville: The doctor spoke of two cases where the nasal condition was made worse after the operation. I think we have in our files ten or fifteen cases that came to us for examination and stated that they had had no trouble whatever with the nose until after ton-

sillectomy. Now we have had enough of these cases that I have begun to wonder what is the cause; why should this be true? Was there some trauma done or some error made in the treatment or did the patient have trouble in the nose before the tonsils were removed but was unaware of it? I am going to start an investigation to see why these cases occur.

DR. S. LAWWILL, Chattanooga: I have seen some few cases made worse by tonsillectomy. One patient came to me after tonsillectomy by a general surgeon with a chronic pharyngitis in which the pillars had been mutilated. That patient had considerable trouble following removal of the tonsils. I imagine that the disturbance of the pillars was the cause. Some patients who have had a chronic otorrhoea over a period of years which dries up following removal of tonsils suffer impairment of hearing because the ossicles ankylose when the discharge ceases. I have one patient who is much deafer since his tonsillectomy because his chronic otorrhoea stopped following the operation and I am sure this is the cause.

Those are the only cases in which I know any bad results following tonsillectomy except in some cases in which the ether anesthetic lighted up an old tuberculosis. All the other patients have improved and nearly all that I have operated on have gained weight, some of them as much as twenty and thirty pounds.

I am amazed at the number of complications said to follow removal of the tonsils, for I do not believe this will occur with proper technique and proper care in selection of cases.

DR. R. PATTERSON, Knoxville: I was interested in Dr. Anthony's report of the improvement or cure in some of the ethmoid cases by tonsillectomy. I have had a few patients in my own practice who suffered with chronic ethmoiditis and chronic tonsillitis in whom removal of the tonsils resulted in a clearing up of the ethmoid infection.

Dr. Anthony has presented a very unique paper and one which we will all find will do us a great deal of good if we would bring it home to ourselves and our own practices. There is nothing that does a man more good than to go over the results of the work he has done. I attempted once to review 5,000 cases in five clinics over a period of time. I was amazed at the results. It brings out some pretty cold facts.

DR. H. E. CHRISTENBERRY, Knoxville: The important points in the examination of patients before operation are what we tell them, what they might expect, and what we would expect from an operation. If a patient has a badly deviated septum or a spur or something that is obstructing the nose, some sinus infection, and thinks that removal of the tonsils and adenoids is going to clear up this condition, he will be very much

disappointed. If the patient has a nose condition as well as a throat condition, we should tell him so, then our end results will be more than satisfactory. We should follow up our patients. We are not doing our patients justice or ourselves when we operate and turn them loose without requesting them to come back for some after treatment or inspection and advice. I am sure our end results will be more satisfactory for all parties concerned if we will follow up our cases. We want to co-operate with the men who send us work. Because the man who refers a patient suggests that this work needs to be done does not compel us to do it if we think otherwise. It is up to our better judgment. He sends the patient to us because we are specializing on this particular branch. He does not pretend to be a specialist; he wants our opinion. If we think we can benefit the patient by an operation well and good; if not, tell the doctor so and give him our advice. Let the patient see an internist to be sure that everything else has been eliminated. There is no serious harm done by removal of the tonsils if it appears to be the best thing to do. I would rather sacrifice a few good or healthy tonsils than to let some patient suffer acutely from bad tonsils that may be causing their trouble.

DR. W. S. DOTSON, Lebanon: I just want to ask the essayist a question about the age. I notice there is one patient under one year and he said in speaking of it that it was a seven-months-old child. There were a few, I do not remember how many, between the ages of one and three. His paper covered tonsillectomy and adenoidectomy, and I just wondered if the patients between one and three had had tonsillectomy, as well as adenoidectomy, and if so, what method did he follow in the patients under the age of three.

DR. M. S. HERRON, Jackson: We had one case referred to us for removal of the tonsils for a so-called heart condition. I told the patient a point that might be well taken by us all, that she go to a good internist to determine the condition of her heart before operation and to see whether the lesion of the heart was the result of a toxic condition or a real organic lesion. Real lesions of the heart in my experience do not give results following tonsillectomy. In toxic conditions of the heart we have gotten good results.

Another class of cases that I have so much to contend with is that of cases of deafness that come to me in middle age or adult life, or even in children. We can protect ourselves if we will make a definite ear diagnosis before we do the operation. I believe that a great deal of fault lies right with us in that we overlook the progressive deafness or some other condition of the drum membrane which does exist.

I want to ask the doctor a question in con-

clusion. Has he had many cases in younger children to return complaining of the symptoms of the adenoid conditions as they did when first operated on; in other words, the mouth breathing and snoring? If you find many of these cases do you believe it is the fault of the operator in leaving adenoid tissue?

DR. C. D. BLASSINGAME, Memphis: The classification of the tonsils I think is a very important thing. As Dr. Anthony said, the submerged or deep tonsil is the type that has given the most difficulty and is the most difficult for us to properly evaluate.

I believe there should be a very close association between the internist and the throat man because these cases go to the internist primarily and then the throat man is asked to survey the proposition. I classify tonsils into four groups. The tonsil that is only slightly inflamed and gives no local or referred symptoms, I would classify as plus one. The tonsil that is questionable in my mind, that I would be governed more on the general symptoms than on the local condition, I would classify as plus two. If I am a little skeptical as to the tonsil being the cause of some general or remote symptoms, I would mark it plus two minus; but if I feel rather strongly that the tonsil is the cause of the focal infection condition, I mark it plus two plus. The tonsil that is having local trouble, that has had a history of tonsillitis and occasionally has had some soreness in the cervical glands, I put down as plus three, and the very bad tonsil as plus four. In classifying a tonsil that way the internist, when he sees my classification, knows exactly what my attitude of mind is toward that case. If there are symptoms of focal infection which he cannot otherwise account for, then he can with some assurance advise as to the removal of the tonsils.

DR. J. J. SHEA, Memphis: I read this paper when Dr. Anthony was making up this classification, and I wish to say several things in behalf of Dr. Anthony's paper. We do not appreciate what results we have gotten until we try checking them up. We have had that experience lately in trying to check up the results of sinus operation. If you sit down eighteen months after an operation is done and see what the end results are, you are not sure of promising the next time a great deal; but, on the other hand, the returns that came in from these questionnaires on tonsils have been such as to make us have greater confidence in advising the removal of tonsils and adenoids under proper conditions. If you will notice in the answers of two hundred and twenty patients, few make the statement that the condition for which they were operated on has advanced. This alone was a very important point that struck me in the answers. The two things

that I was most surprised in the questionnaire was that two cases of optic neuritis were improved. Those cases are not merely on guess; they were under treatment by Dr. Ellett at the time and were followed up afterwards, and there was real improvement in the optic neuritis. The diagnosis of optic neuritis was made by Dr. Ellett and was practically an unimpeachable diagnosis, and they did improve.

As to the age, the fact that Dr. Anthony reports three children under one year of age on whom it was necessary to remove tonsils and adenoids, I wish to substantiate. I do not think the age is any barrier to operation if the pathology is present. The extreme cases in the opposite direction follow the same rule. Some of the best results you obtain come in the age when the tonsil takes on activity, such as occurs in many tonsils after the menopause with inhibited action of the gonads. Infection may enter into the tonsil and other allied lymphoid tissues of the throat. If removed, the result is just as good as in young people. In fact, some of the best results that have been obtained in this series were in older people.

This paper required a great deal of time on the part of Dr. Anthony. He wrote to three hundred and seventy-five private patients and got two hundred and twenty answers to find out just what have been the end results of the removal of tonsils and adenoids.

DR. D. HERBERT ANTHONY, Memphis (closing the discussion): During the last few years the men have been hesitating to write papers on adenoids and tonsils. The reason why I selected this subject was because I wanted to find out what I was doing and try to tell the specialist and the general man something of the results of tonsillectomy and excision of adenoids, to try to give him an idea as to the tonsils we can advise to have removed. Another reason: I wanted to present a paper of this nature to stimulate and encourage somebody else to do the same thing. He may have more patients than I have and get

a larger percentage. There has been so little written on this subject that it is very difficult to find anything to look up and help you out when you go to formulate your paper.

Dr. Dotson asked the method used in operating on patients under three years of age. In the six patients the instrument I used was the Beck-Shanks snare and the small LaForce. They were all done under ether.

The next question asked was about the mouth-breathing following tonsil and adenoid operations. I do find that occasionally a mother complains that the child is sleeping and breathing with his mouth open. I think this is due partly to habit. I think that very seldom we get all the adenoids when the excision method is used. The adenoid being located in the position it is, it is impossible to see exactly what your instrument is doing. If you notice when you take out your adenoids that very seldom you find but a small piece of the capsule of the adenoid is present. It has a definite capsule like the tonsil, but it has not been described very thoroughly. No doubt if you examine these cases—and I have examined older children with the mirror after excision—you will find remnants of adenoid tissue in practically every patient you examine. I do not think it gives any trouble as a rule; but if you try to do too much operating, you get traumatism and scar tissue around the pillars and in the pharynx which will give you more trouble than if you left a little piece of adenoid behind.

The two optic neuritis cases that were operated on for Dr. E. C. Ellett and diagnosed by him were acute cases. The patients came in within a few days after the vision began to fail, and both of these cases went down, one to a perception of light only, and the other to hand movements. Within ten days after operation both of these patients had normal vision. They were kept under observation the whole time. They were intelligent patients, were not neurotic, and we could depend on their statements.

SACRAL ANESTHESIA*

WATT YEISER, M.D., Columbia, Tenn.

FOR a number of years there has been a steady increase in local anesthesia, as well as general anesthesia with all of its new discoveries and their methods of using them. The domain of local anesthesia has so greatly increased of late, that the interest taken in its development has resulted in quite a few operations being done that were formerly delayed or left undone that are now trivial with the use of local anesthesia. (I have chosen sacral anesthesia as my subject, because I think that these nerves offer the largest and most practical field for the use of local anesthesia that there is in surgery.) Spinal anesthesia, of course, is not included in this paper, but I mention it only to condemn it, as at this time it does not compare to general anesthesia in safety, and any man that uses it above the level of the umbilicus is entirely too reckless to be considered worthy of the name doctor, much less surgeon. One might, of course, in some instances be justified in using spinal anesthesia in some selected cases of pelvic work, and I think then there should be some special reason for doing so. It is still being used by some in their genito-urinary work, but even in this the mortality is too high to compare to the general anesthetic. The "field block" and the sacral "nerve block" have almost completely replaced the spinal anesthesia in all gynecological and genito-urinary surgery; it has not only done this, but has broadened this line of work so that it is today robbed of its dread as compared to a few years in the past. I do not believe that any man is justified in subjecting his patient to general anesthesia for such operations as cystoscopy, perineorrhaphy, hemorrhoidectomy, fistula, and he is very rarely justified in giving general anesthesia

for the prostatectomies. In the very nervous cases I am using hypodermically the two cc. ampoule of a fifty per cent solution of magnesium sulphate containing two and one-half per cent novocaine and one-eighth grain morphine, this to be given one and one-half hours before taking the patient to the operating room, and this may be repeated in one hour after first dose unless the patient is very quiet and unconcerned as to what is to happen. It will be surprising to you to note the lasting and soothing effect of the above compound. I am thoroughly convinced that it is half of a general anesthetic. I have repeatedly had the experience of having the patient fall asleep while operating on it after using the magnesium sulphate — morphine — novocaine compound. I think that this combination is far superior to the well known scopolamine-morphine preparation; however, I think that everyone should stick to the one that he is able to get away with the best. For the sacral nerve block one per cent novocaine with ten drops of adrenalin to every 100 CC. And for the infiltration of the abdominal wall I prefer the one-half of one per cent with the same amount of adrenalin. For the injection of the sacral anesthetic I always have these patients lay prone with a pillow under the pelvis, and this is the ideal examination position, as well as the most satisfactory position for all operations on the rectum. I have found that the epidural anesthesia acts far better in the thin patient than in the obese, and it is in the latter where one will most often fail. I have found that I am unable to get anesthesia from epidural injection only in more than fifty per cent of the obese cases, and it is for this reason that one has to add the injection of the sacral foraminae in the obese patient to make his anesthesia a hundred per cent perfect. The sacrum

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and the sacral foraminae are arranged in a V shape, and the foraminae consist of five on either side of the sacrum, and in addition to these foraminae the sacrum has an opening near the articular surface of the coccyx on its posterior surface. This opening is about the size of a pencil in the average case; however, one will find it many times this large in some cases, and so very small in some cases that we meet with great difficulty in getting the needle in the canal. And you will be surprised at the number of deformities of the sacrum and coccyx when doing this kind of anesthesia, and it is in these deformed cases that one has his trials in the effort to do sacral anesthesia and epidural injection. These foraminae are arranged just about equidistant along the borders of the sacrum and in locating these one will find the second sacral foraminae located just about one-half inch inward and downward to the posterior superior spine of the ilium and the fifth foraminae equal with and about one-half inch on either side of the epidural opening. I might mention here that the epidural space should always be injected first and then leave the needle in as a very valuable landmark in locating the fifth foramina. Another point that is well to remember is that it is never necessary to inject the fifth foramina when the epidural space has been injected, as this takes care of the fifth foramina. I suggest that if anyone intends to do this character of anesthesia it would stand him well in hand to provide himself with the Meeker syringe and his specially made needles for this work, as they are very small and of various lengths, and are very hard indeed to break. They are so small that the patients do not complain of the soreness after injection, as they will be more apt to do with the ordinary needles which are apt to break and give one a great deal of trouble in removing them. It is well to always aspirate before injecting the solution into any of these spaces, as the needle might be in the lumen of a blood vessel and should the anesthetic get into the circulation one will most probably get a severe reaction to

wear off, which it will do in a very few minutes; but if in spite of this precaution reaction should become more alarming then one should at once give the following ampoule hypodermically:

Caffein -----	0.25 gm.	gr. IV
Sparteine sulphate -----	0.05 gm.	gr. 4/5
Sodium benzote -----	0.30 gm.	gr. V
Strychnine sulphate --	0.001 gm.	gr. 1/60
Distilled water qs-----	2CC	Zss

The redeeming feature of sacral anesthesia is that it is so well out of the way of the operative field and does not make the pathology appear so different as does the infiltration method. In doing hemorrhoidectomies it is only necessary to inject the epidural space with twenty-five cc and then inject six cc into the third and fourth foramina on either side. It is not necessary to inject all the nerves on either side, as some may have this impression. I am mentioning the anal cases because you will probably have occasion to do more of these under local anesthesia than any other operation. For cystoscopic examination it is only necessary to inject fifteen cc into the epidural space. The following operations are very successfully done with sacral nerve block: hemorrhoids, ischiorectal abscesses, fistulas, perineorrhaphies, cystoscopies, curettage, and forceps deliveries. And by infiltration of the abdominal wall and the space of Retzius primary or secondary prostatectomies can be done painlessly and satisfactorily under direct vision.

Transsacral nerve block associated with a low epidural injection affords complete anesthesia of the bladder and prostate, perineum and os uteri. In the obstetric cases the great advantage of this method is complete relaxation of the pelvic floor, which is more complete than with any other method of anesthesia.

Epidural injection only is very satisfactory in forceps deliveries, manual dilatation of the cervix, and removal of the contents of the uterus in the incomplete abortion. The pain of labor may be controlled by this method, although the abolition of the pain reflex also takes away the voluntary effort of bearing down. Uterine contractions con-

tinue, however, so that if the parturient is instructed when and how to bear down, completion of labor occurs painlessly. The anesthetic should not be injected until after the cervix is well dilated or dilatable, and after having injected the epidural space with twenty-five or thirty CC wait thirty minutes and then give the pituitrin as one would with any other method of delivery. For those that are opposed to the use of pituitrin in their maternity cases the field of usefulness will have greatly increased when a means has been devised to prolong the action of epidural injection.

It is possible that the drugs are already at hand the combination and use of which will anesthetize the entire pelvic floor and viscera for five or six hours without repetition. Such an anesthetic would prove a great blessing in obstetrics and become the anesthetic of choice in normal deliveries without the use of pituitrin. I am not nearly so scared of pituitrin as some, as I have used it for a good many years and have never had occasion to regret it, and by using this as above directed I think that it is pretty nearly an ideal painless labor.

Summary

1. Give an ampoule containing two cc. of a fifty per cent solution of magnesium sulphate, one-eighth grain morphine and two and one-half per cent novocaine one and one-half hours before time set for operating, and repeat this in one hour unless patient is very quiet.

2. Aspirate always before injecting the anesthetic into the epidural space or the foraminae, as one may get the needle in the lumen of the blood vessel.

3. Inject slowly and cease to inject the anesthetic on the first evidence of a reaction.

4. I have found that the injection of the epidural space alone will give anesthesia in eighty per cent of the cases without the transsacral injections, and the greatest number of the failures will be in the obese patients.

5. For the ischiorectal abscesses inject epidural space and the third and fourth

nerves only on the affected side.

6. For hemorrhoids, perineorrhaphies, fistulae, inject the epidural space and the third and fourth foraminae on either side. It is not necessary to inject all the sacral foraminae in these cases.

7. It is never necessary to inject the fifth nerves when the epidural space is injected.

8. For a cystoscopic examination, and instrumental deliveries in obstetric cases the injection of the epidural space only will be quite sufficient.

9. In injecting the epidural space aspirate and then inject, but not until the solution goes without resistance.

DISCUSSION.

DR. DAVID R. PICKENS, Nashville: I enjoyed the paper very much. For the past twelve years I have used sacral anesthesia in several hundred cases, just how many I do not know. In 1916 I reported 100 cases, with most excellent results. Since that time I have used sacral anesthesia in a large number of cases and it has been most satisfactory. In selected cases it is always to be advised. For hemorrhoidectomies, small fistulae, tumors of the rectum and perineum, I think it is absolutely unnecessary. The ordinary nerve blocking, if you know the anatomy of the pelvis, will give you perfect anesthesia and you can start operating immediately without waiting for the anesthetic to take effect. I always have time to wait, but I do not like to wait, so I use ordinary nerve blocking in these cases. Even in cases of carcinoma of the lower rectum, if you wish to do a perineal route it is an excellent procedure. In cases of tuberculosis where we cannot give a general anesthetic, it is to be advised in preference to spinal anesthesia, which I consider more or less dangerous. Sacral anesthesia in heart cases is perfectly safe. In all cases where general anesthesia is contraindicated and you have to operate on the vagina or rectum, the sacral anesthesia is indicated if it is used with certain precautions. I wish to add one to the ones the doctor mentioned. When there is a canal with several segments of bone missing, there is danger of getting into the spinal canal. In women sometimes the cord runs down lower than in man, and this must be considered. When you insert the needle in the sacral canal always withdraw it to see if there is any spinal fluid. If there is, just withdraw the needle until the fluid stops flowing and then inject. The same holds true of the vein. Be sure you are not in a vein, for if you inject this amount of novocain into the

vein it is dangerous. Another thing is the danger of breaking off a needle. I was unfortunate enough to break off one needle. If this happens do not try to get the needle out, for it is surrounded with bony tissue and does not give any trouble. I always use a well tempered, large needle, and believe sacral anesthesia should be used more than it is.

DR. RUSSELL A. HENNESSEY, Memphis: I wish to say something of sacral anesthesia and its applicability to urology. My experience has been minimum in comparison with that of Dr. Yeiser and Dr. Pickens, but I have used it in fourteen successive cases of prostatectomy. It seems to be ideal in those cases in that it spares the already overburdened kidney any further damage. It is of particular use in cystoscopy in the irritable bladder, such as occurs in tuberculous infection or malignancy, and in tumors of the bladder. In the fourteen cases of prostatectomy I had one case which might be called a failure. Perhaps if I had prepared the case as Dr. Yeiser has suggested with preliminary analgesia I would have had better luck, for we gave this patient only a small amount of gas and then could proceed with the operation. In one case the sacral anesthesia was not sufficient in an operation on the bladder and was supplemented by the injection of two upper foramina. It is justified in these cases if for no other reason for the reason that we are then able to inspect the tuberculous bladder the irritability of which makes an examination almost impossible and certainly most unsatisfactory.

I compliment Dr. Yeiser upon bringing this very interesting subject before the Association, for I think it is particularly applicable in urology.

DR. HENRY S. MORRIS, Nashville: I have enjoyed the paper very much and also the dis-

cussion. I had the pleasure during the past winter of seeing a great deal of this work done, not only here but in other places. If it is done carefully and with proper technic, using every precaution that is necessary in the preparation of the patient, its use is almost unlimited. At the Mayo Clinic they are doing practically everything below the Smith & Wesson line with sacral anesthesia. It has certainly been of wonderful assistance to them in their operations. I saw many cases operated there without gas, but they frequently use gas if necessary. One trouble they had there was not only in the obese cases, but in getting the nervous type of patient under control. Dr. Lundy said he had much trouble with the people from the South because they are so nervous and high strung that they are hard to get under the influence of the anesthetic. This makes another set of cases that is probably a little more difficult to control. Perhaps Dr. Pickens could tell you whether the Southerner is difficult to control. In thousands of cases this method has proved eminently successful for the field in which it is used and I certainly commend it.

DR. WATT YEISER, Columbia (closing): In answer to Dr. Pickens' remark about having to wait, after the injection of the epidural space and the third and fourth nerves, one does not have to wait. As to injecting too high and getting into the spinal canal, the very thing to be careful about is to inject just as low as possible, and always aspirate for spinal fluid and blood before injecting at all.

Dr. Lundy does not use the pre-operative injection. I asked him the question and he told me he did not use anything himself, but would suggest that the amateur use the pre-operative injection of morphin and magnesium sulphate.

THE ELEMENT OF TIME; ITS IMPORTANCE IN SURGICAL PROCEDURE OF THE SERIOUSLY INJURED AND SERIOUSLY SICK*

WM. BRITT BURNS, M.D., F.A.C.S., Memphis

THE necessity for the conservation of time in operative procedure is predicated almost entirely upon that condition known as shock, either physical or psychical.

Given a seriously injured person with the vital forces depressed or collapsed, it becomes the part of the surgeon to act with that judgment and skill as will curtail depression or at least will not further collapse.

Without entering into a minute discussion of the definitions of shock and its environing phases, the writer purposes merely to present for your discussion the anamnesis of a seriously injured person, whose recovery with useful stumps, depended to a superlative degree upon quick and accurate operative procedure and technique, plus the knowledge of the anatomical parts, full recognition of healable tissues beyond the microscopic line of injury and the skill of experience.

Anamnesis: F. B., age 19, weight 130 pounds, single, living at Marie, Ark., father and mother dead. No brothers; no sisters. General condition good, well nourished, not robust.

Previous history: Negative for this case. Present condition: Both legs crushed practically to the knee; injury to left leg reaching up behind the knee.

The soft tissues are so badly damaged that it will not be possible to save anything below the knee.

The above injuries were due to this patient having fallen under the moving wheels of a box car, the wheels passing over his legs.

Operation: The operation was quickly planned. The patient was etherized. The parts washed with benzine and thoroughly painted with iodine. In order to get healable flaps it was necessary to invade tissue beyond (above) the macroscopic line of injury.

Both thighs were amputated above the knees. The right thigh through the lower third; the left thigh at the junction of the lower with the middle third.

The amputation of the right thigh was done in one minute and instantly put into the hands of my first assistant (my son, Dr. Coleman C. Burus) and the house surgeon, Dr. McCormick, who were to complete the operation, that of tying vessels, pulling down and cutting off nerves, suturing the flaps and putting in drainage. Immediately I took up the left thigh and in the next minute had severed that member, being assisted by one of the internes. The vessels were tied, nerves pulled down and severed, and drainage and sutures put in place. Bandages were applied and the patient was being started to the ward at the end of twenty minutes.

Method of Operation: The anterior flap—skin flap—was made with a medium size scapel and the posterior flap—musculo-cutaneous flap—was made with a long (Catlin) transfixion knife.

The principal vessels are avoided in making the anterior flap and left for severance with the long knife, getting these with all other tissues posterior to the bone, in one quick sweep of the knife.

The patient left the table with remarkably little shock. He was followed to the ward and given 500 cc. of hot normal saline solution. To this he responded satisfactorily.

He was brought to the hospital at 9:00 p.m. (July 23). We left him at 10:30 p.m. in a hopeful condition. At 9:00 a.m., July 24, it was apparent that he would live.

This boy was injured about 3:00 p.m., July 23, and was brought to Memphis on the train. He told me that he dragged himself from the track to the shade of a tree off the right of way and held his maimed and bleeding limbs up, one in each hand until several minutes later when assistance came to him. He never lost consciousness, and says that he was not very sick. So that I take it he really had little hemorrhage or shock. When he reached us at Memphis he was in fair condition. Pulse 100 and fair volume. His skin was dry. He was thoroughly conscious.

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This is a temporary depression or collapse of the vital forces due to psychical or physical trauma, and in which alteration of blood pressure is a cardinal feature due to vasomotor inhibition or exhaustion.

The term "collapse" is sometimes used for cases due to non-surgical causes, and the terms "surgical shock," "ordinary

shock" and "psychic shock" are also used by others with the same etiologic distinction in view.

It is maintained by some that shock is due to inhibition of the vasomotor centers, and collapse ensues upon exhaustion of them, hence the former occurs immediately and the latter gradually.

AMPUTATIONS IN INDUSTRIAL SURGERY*

W. S. ANDERSON, M.D., Memphis

THE chief aim in an amputation is first to conserve the life and health of your patient; second, to conserve as much as possible the functions of the member. The first requires that we remove as much as is necessary; the second, that no more than necessary be removed. It is vital that we adjust and harmonize these two principles in determining the time and technique of each operation.

The element of time is of special interest in trauma and gangrene resulting therefrom, for if the operation be done too early too much of the member may be removed in the one case, and too little in the other. Frequently, tissue that on first inspection seemed beyond saving or repairing, may survive, and in gangrene, tissue that seemed viable may be left, only to necessitate a secondary operation, which is embarrassing and often dangerous.

Amputation has been termed the "last resource" of the surgeon.

Recourse to this radical measures signifies that he is, in his belief, unable by any effort to restore the injured limb to usefulness. This step may often require the keenest judgment on his part, and it is remarkable how, in the history of amputations, this has swayed between the two extremes of radicalism and conservatism.

It is, of course, now remarkable that, prior to the introduction of the ligature, tourniquet and antiseptics, that amputation was for the most part confined to the removal of members which were all but severed by the accident itself or were already the seat of gangrene.

On the other hand, the introduction of many types of amputations during the early part of this century were done to the

most reckless condemnation and amputation of limbs. Many limbs were also sacrificed eventually as the result of the faulty methods of treating wounds.

The absorbable ligature and antiseptics have been the two chief causes in securing the results in amputations, as now practiced.

Speaking generally, it is proper to resort to amputation when the sacrifice of the member, which is injured, is necessary to the preservation of life, or the enjoyment of its various functions and duties.

It should always be kept in mind that most people would prefer to be kept living with two or three members than dead with four.

The varying conditions of each injured case should be carefully weighed for conditions may arise and make an operation imperative, which but a few days before seemed uncalled for.

WHEN SHOULD WE OPERATE?

First (A) when, from an accident of any kind, a limb is severed from its connection; (B) when the soft parts are so mutilated that the member is only attached by skin or pulpified muscles. Here amputation is absolutely indicated. There is absolutely no need for waiting, but the completion of the ablation may be secured by trimming up the tissues and removing sufficient bone that a proper stump may be formed. In a large majority of cases by this means a better functional result may be obtained than by formal amputation quite above the site of injury. (Such a procedure cannot be followed in cases seen late with beginning signs of infection. Here it is not safe to delay and risk the chances of sepsis and we should under these circumstances proceed to amputation well above the suspected level.)

Wounds from railroad accidents, saw-

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mills and machine shops, extensive crushing wounds from wagons and automobiles afford numerous instances where this type of procedure should be adopted, for the shock attending the crushing or tearing off of a leg or arm is very great and a formal operation with the added shock and attendant loss of blood should be dispensed with. There is an added element of shock here if the crushed member is not removed, and I think this the easiest and quickest way and attendant with the least shock.

COMPOUND FRACTURES.

Not many years ago the presence of a compound comminuted fracture was treated by an amputation, even sometimes where unattended with much laceration of the soft parts. Here great strides have been made in the treatment of this type of case by conservatism, so that at the present day ordinary compound fractures should present no need for amputation.

Especially would I like to advocate extreme conservatism in all injuries of the upper extremities.

Suppose such a case—an arm has been run over by the wheel of some heavy vehicle. It is flail-like skin not broken, no particular points of bleeding, palpation shows that muscles are reduced to pulp, bone crushed, but below the injury there is some pulsation in the vessels. Should we amputate? No. Here sterilization, warmth and immobilization are essential features. Even when there is no pulsation in the principal arteries, we can often delay, although a part of the limb will subsequently have to be sacrificed.

Two reasons are obvious: First, that the shock may subside; second, that too much of the limb may not be sacrificed, for often tissue which at first may appear devitalized may finally survive and thus preserve a function that might otherwise have been sacrificed.

INJURIES OF THE FOOT AND LEG.

The rules of conservatism do not apply with equal force to the arm and legs. The greater freedom of the collateral circulation in the arm renders gangrene less probable. So where conservatism should be

the proper procedure in the upper, amputation would be applicable in the lower limb.

Extensive comminution and loss of bone in the foot often should be amputated, for if saved it may be a useless member as a means of walking. Here amputation with an artificial limb is far more satisfactory. Severe laceration of the soft parts with extensive destruction of bones and injury to vessels should be amputated for the resulting cicatrix from the destruction of the skin on the sole and heel will not often be able to carry the weight of the body and consequently would always be a source of suffering and discomfort to its owner. Aside from the above noted exceptions in injuries to the foot the rule should be: wherever possible avoid amputation, using all your skill to the preventing of infection, for this is the *sine qua non*. Be diligent and if the member is to be treated in a half-hearted way, then it is better to be amputated at once.

INJURIES TO THE HAND AND ARM.

There is a tendency in the mind of the public to consider an injury by the size of the member involved. They will say it was only a finger hurt, and there has been many a good hand lost, just from such thoughts and neglect, which otherwise could have been saved. It is not saying too much to say in this connection that the best of human skill is none too good when employed to repair injuries of that mechanically most perfect member—the hand.

WHEN IS THE PROPER TIME TO OPERATE FOLLOWING THE INJURY?

There are a few contraindications to operations—first, temporary; second, permanent. Among the former is extreme shock and exhaustion from loss of blood; the latter where there is no possibility to restore the patient to health.

While the patient is suffering from shock, excessive loss of blood and collapse, it would seal his fate to operate.

At least moderate reaction must invariably be waited for, irrespective of its time or appearance. It is a good cardinal principle to never operate a case in shock.

When reaction has been established by the various means now employed, is the most appropriate time. With very few exceptions surgeons of today recognize the need and practice early operation, after reaction has been established, where conservatism cannot be employed.

TYPES OF AMPUTATION.

These are many, and I will only mention that the method should be fitted to the individual case and no typical type of operation fitted to the case.

In our technique we should always have in mind conservatism of function and the formation of a good sound stump with ample blood supply, one not easily irritated. Upon the shape of the flap depends the location of the resulting cicatrix. So in placing this we must always consider the occupation of our patient and the possibility of the use of an artificial limb.

In the case of the leg, for example, the tension in the stump might fall right at the end, so a cicatrix here would be a source of considerable irritation and annoyance.

The conclusions are:

First. Always await reaction following injury before amputating.

Second. The chief aim of any type of amputation is first to conserve life and, second, to save as much as possible the function of the member operated.

Three. Keep in mind the fact that some types of injury may be treated with conservatism and amputation avoided.

Fourth. Compound and often comminuted fractures of the extremities can be treated with conservatism.

Fifth. That the rule of conservatism cannot be applied with equal force to the upper and lower extremities.

Sixth. The proper placing of the cicatrix is very important to those who expect to wear an artificial limb.

DISCUSSION ON PAPERS OF DRs. ANDERSON AND BURNS.

DR. DUNCAN EVE, Nashville: This subject is too interesting to let pass without discussion. They are both very timely papers because of the very frequent necessity we have to amputate. The number of amputations would seemingly teach

us a lesson as to what should be done in every case. Where one has had the experience of many such cases he should learn from intuition and from real practice what should be done under ordinary circumstances, but with all this, there is a certain amount of uncertainty that we have to consider before determining what amputation we should make, so far as the question of flap is concerned and even what are the idiosyncrasies that are factors in the case. Particularly is this true in Dr. Burns' report, where a double amputation was practiced. While it is unusual for such a patient to get well, where the amputations are so high up, there are some patients who have recovered from even quadruple amputations. The case that has perhaps caused more discussion than any other was one at Columbus, Ohio, where both legs were amputated above the knees and one arm at the shoulder. This poor fellow, a railroad man, hovered between life and death for quite a while, but by means of blood-transfusion was saved. Other amputations have been made, especially high up, with even greater danger. If only one limb is to be amputated, it would ordinarily be an easy matter. The patient would be expected to recover, but they do not always. A case may be attended by the best surgeon in the community and the patient may fail to react from shock. That is the great thing we have to combat, particularly in double amputations, as in Dr. Burns' case.

While the amputations are much better performed than formerly, they are not altogether to be relied upon to save the patient. We work as hard as we can, but in spite of our best efforts some of these fellows turn their toes up and die, and this without any ceremony. I know of cases where patients have been doing splendidly, the shock being overcome and recovery expected, and without any apparent reason death sometimes occurs. Of course the more numerous the amputations and the higher up they are the more serious the case becomes.

One thing I think was not mentioned in either paper and that is the practice of amputations done in the two-time method. Of course, other things being equal the quicker one can make an amputation and the less bleeding there is the more favorable should be the prognosis. We do a two-time operation, cutting through the flesh and arresting hemorrhage, and then a day or two later divide the bone or bones and adjust the flaps, or we may simply ligate the principal artery and finish afterward. This is an exception to the rule, but it becomes necessary in some instances, as in Dr. Burns' case, for instance, in which he was so clever that he did not have to make the two-stage operation.

There are many things to speak of, particularly the question of combatting shock. That is the

most serious thing we have in amputations. Patients die easily as the result of shock and we should go into the fight prepared to overcome this as quickly as possible. For that reason in the late World's War the guillotine operation was done in order to lessen the amount of shock. We now use many things to combat shock, as hypodermoclysis, keeping the patients warm, etc.

DR. S. C. WOLDENBERG, Chicago, Ill. (by invitation): I am very much interested in amputations from the orthopedic standpoint and it has been my privilege to be assigned to the United States Veterans' Bureau and in charge of the Orthopedic Department. We had from October, 1920, to October, 1923, the privilege of examining over 700 amputations. I wish to say that most of the amputations done during the war have had to be re-operated. I do not know whether the doctors brought out the after-treatment of amputation or not, which I believe is of more importance than the amputation itself. Anyone can do the amputation who can handle a knife, but we have great difficulty in the after-care which comes under the department of rehabilitation of the injured. With patients who have to do much walking, the question comes up, is it advisable to have him go back to his former occupation with an artificial limb immediately or wait for a short time after operation? Who is to judge? How soon shall the patient be put back to work? Then comes the question what type of artificial limb shall be furnished? Sometimes you will find that the patient has had four or five artificial limbs before they found a satisfactory one. I am not a railroad surgeon, but the Veterans' Bureau is considered with the treatment, care and after-care of the injured in about the same respects as a railroad company is, i. e., how soon can the injured man be returned to work? What will be the amount of permanent disability? In other words, they are anxious to do everything possible to obtain as near normal function as is possible, cut down the number of non-effective days and the resulting expense.

Changing of artificial limbs that cost from \$100.00 to \$150.00 is a matter of great expense.

We have found that gentle massage of the stump as soon as possible after operation is of great benefit; we therefore place the patient in the reconstruction department, under the care of a doctor, where he receives massage twice a day.

More care should be taken during an amputation when dealing with the nerves. We find at reamputation many neuromas, some quite extensive, and I feel sure the number could be reduced if the proper care was taken at the time of operation.

The next thing is to begin walking with a temporary limb as early as possible. They should start about thirty to sixty days after operation.

Our practice is to begin about the fifth week, although we sometimes begin as early as the third week. If walking is not started early the stump may atrophy and the muscles become weak and flabby, or the stump may hypertrophy, making it difficult to obtain a good fitting limb. Then there is another point that I believe is often overlooked and that is not enough attention is paid to the manner in which the patient walks. By teaching him to walk properly much time can be saved and the patient can be sent back to work much sooner than otherwise.

DR. JERE CROOK, Jackson: I believe we can profitably spend a few additional moments in discussing the best method of overcoming shock. It seems to be generally conceded that shock is responsible for death. Now, as an instance, take up psychic shock. In a man of normal sensibilities who has gone through the horror of a crushing injury, mangle and perhaps crushing off a limb, he is in a distressed and pitiable mental attitude, and the first thing we should do is to obtund that man's sensibilities to the physiological extent by the use of morphin and atropin, getting him to a benumbed state until he is no longer conscious of his condition. That is usually done, but perhaps we do not give enough of the opiate. The ordinary dose of 1/150 and 1/4 will do for the crushed finger, but not for the crushed limb, and in the case where we would ordinarily give one-fourth grain we should give one-half grain.

The next thing is the importance of external heat. I do not mean applied directly to the limb, but placing the patient in a warm room, where the surrounding temperature is seventy or seventy-five degrees F. A man may be mangled on a cold day and will be brought in chilled to the bone, his temperature below normal, so if we can get him into a properly heated room, that comes next to the opiate in value.

The next thing that is the cause of shock is the loss of blood. This should be differentiated from psychic shock, for it is due to diminished flow in the blood vessels from sudden loss of the circulating medium, which enfeebles the heart action and lowers the vitality.

Now, what shall we do? We bring the patient into a warm room, give a large dose of morphin and atropin, and we assume that the hemorrhage has been taken care of temporarily by tourniquets and clamps, and when we are sure that there is no further chance for loss of blood, we should give that man a large dose, two pints or more, of warm saline solution into his veins. Do not fool, or delay, with hypodermoclysis—put it into the veins. Then you have put him into a condition to tide him over the crisis and should there have been a serious loss of blood one has gained time for getting ready for blood transfusion. First

give that man a good circulating medium of normal salt solution, quickly prepared and promptly given. It may be greenback currency, but you can redeem it with the pure gold of whole blood later on. If you do these things you will frequently have your patient in good condition for operation within one or two hours.

I would advise synchronous operations as was done in Dr. Burns' case. The main thing is to have enough help so that the two operations can be done practically simultaneously, because that diminishes the time on the operating table and is a great factor in saving the patient.

DR. WILLIAM S. AUSTIN, Knoxville: I wish to say just a few words. Dr. Woldenberg brought up the question of after care and I agree that it is of great importance. In some of the injuries we do not get the flaps as short or as long as we should in the haste of operation. The question of taking care of the stumps is a great one for the surgeon. It often means re-amputation and it often means section of the nerves. The thing to do is to see that the nerve tissues are sufficiently cut back so that there is no danger of the incorporation of any of the nerve tissues in the cicatricial tissue when it forms. The thing I wish the essayists would express themselves upon is the period within which we should put the man back to work after amputation. That is important to all the industrial companies, both regarding loss of time and compensation. The companies, of course, want to get out of paying as much of the expense as possible.

DR. A. F. RICHARDS, Sparta: The thing of vital importance, as I see it, is the psychological time to do the amputation. I have always been at a loss to know when the psychological time has arrived. Shock being of a dual character makes it a question of personal judgment for the operator, and he may amputate too soon or too late. Of course, the settlement of this point largely depends upon a man's experience. The hurried operations are the ones that come following accidents and they are the ones that put us to the greatest test. Sometimes I think great good is accomplished by the after-treatment mentioned, the administration of the morphin and atropin after the arrest of the hemorrhage. If we could always know just when we have reached the point of restitution we would have accomplished a great deal in the end—results of our operation, of course. I feel that sometimes after having been taught as I was early in life that rapid work was the secret of success, that in our effort to do this we sometimes do the operation too early and too quickly and do not give the same good treatment of the nerve ends and the same treatment of the tissues and the scar that we would get if we waited a little longer before amputation.

I have been much interested in the two papers, and on account of my limited experience I will say no more.

DR. L. E. TREVATHAN, Junction City: I do some railroad surgery, but in the very severe injuries I had no opportunity for doing amputations, and I would like to hear some suggestions of how to get these seriously injured patients to where they can be operated upon successfully.

Some one spoke of injuries in the cold weather. The night before Christmas an engineer had his left arm through the reverse gear and the fireman or some one reversed the gear and crushed the arm until it was almost off. I was called and saw the man within about five minutes. I found the poor fellow sitting in the north open door (front end) of the baggage car. I got him into the warm end of the baggage car and gave him a hypodermic of morphin and brought him up here and Dr. Eve amputated his crushed arm later on. I do not know whether there is anything on the program that brings this out, but I would like very much to hear the first aid work discussed.

DR. GARRETT WHITE, Chapel Hill: The following case of a railroad hand age about 45, who was standing over a charge of three sticks of dynamite which was accidentally exploded, mangling right arm so badly that it had to be amputated near shoulder, left arm badly broken, face mangled with dirt and stone in it and one eye blown out. I saw this patient within thirty minutes after the accident. He was cold and pulseless, suffering from extreme shock and loss of blood, which condition I treated six or seven hours, after which time Dr. Duncan Eve, of Nashville, arrived and amputated his arm. As soon as he was recovered from anesthetic sufficiently, about four hours, he sat up and rode to the hospital in Nashville, a distance of forty miles, and made a satisfactory recovery from his injuries. It was absolutely necessary to treat this man for shock before an operation could be made.

Case No. 2, where it was absolutely necessary to operate immediately to save the life of the patient. A school boy, age 17, struck with a rock behind right ear, skull crushed in, pressing on brain. Patient unconscious, breathing stenderous, pulse running as low as 40 and as high as 160. I trephined and removed fragments of bone within one hour after accident. Patient came out from ether conscious and made an uneventful recovery. Eyes were slightly crossed for about a month, but got all right.

Our object in making these reports is to illustrate the fact that we cannot, in every case, wait to combat shock.

DR. W. S. ANDERSON, Memphis (closing): There was one question asked, how to prepare the severely injured man for removal to the hospital. I think that is very important, especially in the localities where there is no chance for operation. I would say that the first and most important thing is to give large doses of morphin and atropin to deaden the sensibilities of the patient as much as possible. Second, I would apply warmth to the limb, envelop the patient in warm blankets with hot water bottles, and would try to transport him in a warm conveyance of some type. Before doing that I think he should have some warm saline, as Dr. Crook brought out. These patients have all lost a large amount of blood and have to have something to function on during transportation. They should be cleaned up with large amounts of benzine and gasoline to get rid of the grit and dirt and then the limb should be bandaged, to keep out further dirt. If there is oozing a tourniquet should be applied, but not too tight, for great damage can be done by improperly applied tourniquets and there may be sloughing below where the tourniquet was applied, so that it may be necessary to go above that to amputate.

As to when to operate, there are some things that I might lay emphasis on. In shock we have a fast, accelerated pulse, because the vessels have been depleted and have nothing to work on. This may be overcome by the injection of the saline solution. There is a cold, clammy sweat, and this can be reduced by means of morphin and atropin. When this has been taken care of a patient begins to pick up a bit and then I think we are safe in going on with the amputation. After the amputation has been done we can give a subsequent dose of saline to fill up the blood

vessels, and if they do not respond to this it is well to have a patient typed up so that a blood transfusion can be given.

In the after-treatment, Dr. Woldenberg brought out some important points that should be remembered. I think the use of a binder or reducer is a good thing to get the patients up on their feet so that when the limb has been properly reduced they can have an artificial leg without any subsequent expense, except for the one limb.

DR. WILLIAM BRITT BURNS, Memphis (closing): There seems to be little more to say, after this very interesting discussion. My paper was just an epitome of what the title indicated, purely to stimulate the discussion. There were some points that might be touched upon that perhaps have not been sufficiently brought out, not salient points, perhaps, but something that has occurred in my experience. One of the doctors spoke of injuries on cold nights, and especially the one on Christmas Eve. I happened to remember that on two Christmas Eves about midnight I had two crushing injuries, one of the hand and one of the thigh, both of which were amputated under alcohol anesthesia that they got down at Gallagher's. Neither one of the men required ether. I don't think many of the doctors here agree that alcohol is a depressant, but it is so stated in all the materia medica on the action of drugs. Alcohol gives a little period of exhilaration, a period of joy that makes one foolish, but it is just good to get drunk on. After that it "obtunds," as Dr. Crook would say and as he would have us do, the nervous system as completely as any hypnotic. On two occasions about fifteen years ago I amputated a forearm and a thigh under nothing but whisky anesthesia.

THE JOURNAL

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J. F. GALLAGHER, M.D. -----Editor

R. C. DERIVAUX, M.D. -----Associate Editor

JANUARY, 1926

EDITORIAL

THE CHANGE OF DATE OF MEETING.

On account of the the proximity of the dates of meeting of the Tennessee State Medical Association and the American Medical Association, the date of meeting of our Association has been changed to **May 11, 12 and 13th.** The Eye, Ear, Nose and Throat Section and the Tennessee State Association of Railroad Surgeons will be held on May 10th. A letter has been mailed to each individual member giving this information and it is to be hoped that no confusion will arise on account of this change. The officers, who are delegated with the power to make a change in the date of meeting, after carefully considering all contingencies, were unanimous in their opinion that such a change should be made. They had particularly in mind the welfare of both organizations and especially the convenience of our membership residing in Middle and East Tennessee.

Our meeting was scheduled to take place during the week just prior to the meeting of the American Medical Association. It was thought by the officers that one desiring to attend both meetings would be away from his work too long and hence it was reasoned that on account of this fact a member would absent himself from one or the other meetings. Furthermore, that if he attended our meeting in Memphis several days would be consumed in idleness if he wished to proceed from Memphis to Dallas. Also, the date of sale of railroad tickets carrying a reduction in fare, would be too late for our membership to avail itself of,

even if it were desirable to disregard the loss of time.

The coming meeting in Memphis offers every indication of being one of our most successful. The local committee on arrangements with Dr. Battle Malone, Chairman, has been at work some time and the plans and program are progressing to a satisfactory completion. Make your hotel reservations early and plan to spend the entire three days in the Bluff City.

SECRETARIES TAKE NOTICE.

Chapter 4, Section 2 of the Constitution and By-Laws provides as follows: "Each component county society shall be entitled to send to the House of Delegates each year one delegate for every fifty members, and one for every fraction thereof; but each county society holding a charter from this Association, which has made its annual report, *and paid its assessments as provided in this Constitution and By-Laws,* shall be entitled to one delegate."

It will be seen from the above that unless a county has reported to this office and the members thereof paid their dues, that county will lose its representation in the House of Delegates. This is a privilege which the members of component county societies should not surrender through the inactivity or carelessness of the county secretary.

DEATHS

Dr. T. J. McKamy of Cleveland, aged 57, died December 27. Dr. McKamy was a graduate of Vanderbilt University and a member of the Bradley County Medical Society.

Dr. Samuel Bridgewater of Dixon Springs, aged 69, died January 2. Dr. Bridgewater was a graduate of the University of Nashville in the class of 1877.

Dr. James J. Rucker, aged 80, veteran physician of Overall, died January 10th.

Dr. Rucker was a graduate of the University of Pennsylvania, School of Medicine, Philadelphia, in the class of 1869, and was a member of the Rutherford County Medical Society at the time of his death.

Dr. S. B. Fowler, aged 73, one of Tennessee's leading physicians and surgeons of Hendersonville, died January 17th, following an illness of about two months. Dr. Fowler was a graduate of the Ohio College of Medicine, Cincinnati, and was one of the early presidents of the Tennessee State Medical Association.

Dr. J. A. Moss of Memphis, aged 78, died January 18th. Dr. Moss was a graduate of the University of Pennsylvania, School of Medicine, in the class of 1871.

NEWS NOTES AND COMMENT

Pay your dues.

Dr. J. P. Lindsey, formerly of Pruden, has opened offices in LaFollette.

Dr. D. H. Williams, of Knoxville, is spending the winter in Florida.

Dr. Dewey H. Peters, of Knoxville, married Miss Mary Elizabeth Crowell, also of Knoxville, recently.

Dr. A. F. Richards, of Sparta, has moved to Nashville, he having accepted a position in the Federal Department of Health of the State of Tennessee.

Drs. S. W. Coley, F. W. Fielder and M. W. Searight, of Memphis, purchased a residence at 1093 Madison Avenue, which they will remodel and occupy as a clinic.

The physicians of Knoxville who had been serving the Knoxville Health Center resigned on January 13 their position at the request of the Knoxville Medical Society.

Dr. W. D. Haggard, Nashville, was pre-

sented with the Kiwanis Cup awarded annually by that organization to the citizen who has been outstanding in public service the previous year.

MEDICAL SOCIETIES

At the regular December meeting of the Bedford County Medical Society, the following were elected officers for the ensuing year: Dr. M. L. Connell, Wartrace, president; Dr. V. K. Earthman, Shelbyville; Dr. W. H. Avery, Shelbyville, secretary-treasurer; Dr. T. H. Woods, Bellbuckle, censor; Dr. J. P. Taylor, Wartrace, delegate; Dr. W. H. Avery, alternate.

The Knox County Medical Society have elected the following officers to serve during the year 1926: Dr. M. H. Lee, president; Dr. Henry Clay Long, vice-president; Dr. Jesse C. Hill, secretary-treasurer. All are residents of Knoxville.

Officers to serve the Anderson County Medical Society the ensuing year are: Dr. J. Sam Taylor, Clinton, president; Dr. H. F. Stiltner, Clinton, vice-president; Dr. J. S. Hall, Clinton, secretary; Dr. J. M. Cox, Coal Creek, delegate to the state convention.

The Hamilton County Medical Society have elected officers to serve their society for the ensuing year as follows: Dr. S. S. Marchbanks, president; Dr. Ed Newell, vice-president; Dr. Lyle West, secretary. All reside in Chattanooga.

Dr. R. J. Perry, Springville, was elected president of the Henry County Medical Society and Dr. R. L. Witherington, Paris, secretary-treasurer.

The Williamson County Medical Society have elected officers for the ensuing year as follows: Dr. J. P. Moore, College Grove, president; Dr. B. T. Nolen, Franklin, vice-president; Dr. K. S. How-

lett, Franklin, secretary-treasurer; Dr. J. P. Moore, delegate; Dr. Dan German, alternate.

The Lauderdale County Medical Society have elected the following officers to serve during the ensuing year: Dr. J. B. Lackey, president; Dr. S. M. Glenn, vice-president; Dr. W. V. Sanford, secretary-treasurer. All reside in Ripley.

Dr. R. L. Bean of Cleveland has been elected president of the Bradley County Medical Society. Other officers elected were: Dr. J. F. Gilbert, Cleveland, vice-president, and Dr. H. W. Harris, Cleveland, secretary-treasurer.

The Loudon County Medical Society elected Dr. W. D. Padget president of that society and Dr. J. G. Eblen, secretary-treasurer. Both reside in Lenoir City.

The Hickman County Medical Society have elected the following officers for the ensuing year: Dr. J. B. Webb, Goodrich, president; Dr. C. V. Stevenson, Centreville, vice-president; Dr. W. K. Edwards, Centreville, secretary-treasurer; Dr. John S. Beasley, Centreville, delegate.

The Campbell County Medical Society elected Dr. H. L. Gallaher, Careyville, president; Dr. Thomas Jennings, Jellico, vice-president; Dr. F. A. McClintock, Newcomb, secretary-treasurer.

Dr. J. M. Shelton, Kelso, was elected president of the Lincoln County Medical Society at their meeting in December; Dr. T. A. Patrick, Fayetteville, vice-president, and Dr. C. L. Goodrich, Fayetteville, secretary-treasurer.

MISCELLANEOUS

THE HABIT OF ATTENDING MEDICAL MEETINGS.

Presence at a meeting, hearing discussions and papers not only is of value to the

beginner, but has been considered of importance to our masters, says Marcus Feingold, New Orleans (Journal A. M. A., July 11, 1925). Naturally, not all that is transacted in every meeting is of the kind that signifies progress and betterment; some things presented may be of the kind that should be avoided and deprecated. But there is good also in listening to this kind because it teaches how to avoid the mistakes of others. Presence at meetings produces, in different members of the audience, various emotions. These emotions must apparently fall into one or more of the following subdivisions: admiration for the subject or the speaker; feeling of one's own inferiority in having done so little; the desire to imitate that piece of work and that method; the determination not to overlook this or that in the future, and regrets at having failed to observe this and that. Attendance at meetings has often led to ties of the most fruitful and warmest friendships among medical men the world over. History of medicine contains many records of the wonderful effects of exchange of thoughts among friendly spirits, just as these medical meetings. Attendance at meetings must not be limited to those of our immediate circles. The larger the group of individuals banded together, the greater is the probability of valuable and stimulating contributions at that meeting.

EMORY UNIVERSITY, ATLANTA, GA.

Announces the launching of a \$4,500,000 endowment and building program for its Medical School (formerly the Atlanta Medical College) and Hospital (the Wesley Memorial Hospital). The support of the medical profession is solicited.

The \$10,000,000 expansion campaign now under way will provide for all schools of the university, which are as follows: The College of Liberal Arts, the School of Medicine, the Graduate School, the School of Business Administration, the School of Law and the School of Theology.

Harvey W. Cox, Ph.D., LL.D.,
President.

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EXTRA-UTERINE PREGNANCY*

L. L. SHEDDAN, M.D., Knoxville

THIS paper is not intended for the experienced surgeon who is constantly coming in contact with cases of extra-uterine pregnancy. To those of you who have had a large experience in pelvic and abdominal surgery, what I may have to say may appear to be regular kindergarten material. However, primary stuff may at times prove beneficial to those of mature years, hence I beg your indulgence.

To the general practitioner and family physician who is the first to come in contact with these cases, this paper is especially directed and if I can say anything which may prove interesting and helpful to them I will have accomplished my purpose.

It is not my desire to go into a lengthy discussion of the history of the evolution of the treatment of extra-uterine pregnancy. Neither will I burden you with a long list of case reports. What I will have to say will be along the lines of etiology, symptomatology and diagnosis, based upon personal experience, and a general knowledge of the subject.

Extra-uterine pregnancy is of equal interest to the general practitioner, obstetrician, surgeon and gynecologist. While this pathological entity is not of common occurrence, it does occur with sufficient fre-

quency to make it a very important subject for the reason of its disastrous results when not recognized and properly treated.

It is generally conceded that fecundation takes place somewhere along the lumen of the tube, probably near the outer end. Whether this is true in the majority of cases or not we have no way of proving. However, we do know that fecundation does take place in the tube at times. Did it not there would be no such disastrous pathology as ectopic pregnancy.

The normal uterus above the internal os, as well as the tubes, are lined with ciliated epithelium. What is the function of this variety of epithelium? Here, as in the respiratory tract, the function of the ciliated epithelium is protective. In that by its wafting or wave like motion a current is created which flows from within outward removing from the organs thus supplied foreign and noxious substances. Under normal conditions when ovulation takes place the ovum is caught up by this current and drawn into the lumen of the tube where it is grasped by the ciliated epithelium and wafted on into the uterus where it is cast off in the menstrual discharges.

The spermatozoa being a living actively motile organism is of a different turn of mind. His ambition is to climb higher so that his motto is ever onward and upward.

*Read before the Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

He is able by his inherent motive power to resist and overcome the wave like motion of the ciliated epithelium and to stem the current so created and by his upward and onward movement he will traverse the uterus, enter the uterine ostium and pass on outward and, unless he meets a suitable affinity, will wander into the peritoneal cavity and be lost.

Should this young gentlemen meet his affinity he acts as all well trained young men should do, he stops and embraces her and a union takes place. And as is the case in all marriages, this young man ceases to be a separate and active entity but is entirely passive in the hands of his female partner. And, were it not for this wafting and wave like action of the epithilium, here he would remain with disastrous results to himself as well as to his host. However, this action on the part of the ciliated epithelium, soon moves the wedded pair along to the uterine cavity where conditions are favorable for growth and development. This is probably the normal course of events in the fecundation and development of the embryo.

What are some of the causes for the vicious development of the product of conception known as ectopic or extra-uterine pregnancy? The causes of this disaster are many. Anything that destroys or cripples the ciliated epithelium lining the tubes will stop the current, and the fecundated ovum, being an entirely passive body, will be arrested at this eddy in the current and attach itself to the tubal mucosa. Any acute inflammatory process affecting the tubal mucous membrane is prone to cripple or destroy the ciliated epithelium. This is most frequently caused by a Niserian infection. Of course if this infection is virulent and a pus tube is formed, or if as frequently happens, the frimbriated extremity becomes sealed up by adhesions, the function of the tube is entirely destroyed and complete sterility will be the result.

Salpingitis may result from some of the acute exanthmatous diseases as scarlet fever and measles, or as a result of infec-

tions following labor abortion or curetting. Malformations and distortions of the tube whether congenital and due to developmental defects, or from injuries or other intraperitoneal infection, as acute appendicitis, tuberculous peritonitis causing kinking of the tube or constrictions due to bands of adhesions, or tumor formations causing pressure. Any of these conditions may act as barriers to pregnancy. If the lumen of the tube is entirely obliterated fecundation is an utter impossibility. However, no matter how distorted the tube, provided it is patulous, the spermatozoon, by his inherent motive powers and his persistence will wiggle his way through to meet his affinity. After such meeting and fecundation takes place the product of such union no longer possesses the power of migration and becomes entirely passive and rapidly begins to grow and enlarge. And, should the cilia of the epithelium have been crippled, or destroyed, or should there be strictures or deformities due to congenital defects, or to outside pathology, this product of conception fails to find its way back to the uterine cavity, but is arrested at the point of injury and forms an attachment at this location and thus is ectopic.

It is possible for there to be both an extra and intrauterine pregnancy at the same time. However, this is of rare occurrence. More frequently will there be a double tubal pregnancy. I have had one such case of this kind myself. Extra uterine or tubal pregnancy is positive evidence of some previous tubal pathology.

As to the frequency of this condition I am not able to say. It is however, of sufficient frequency for us to alway take it into consideration when certain symptoms present themselves.

Location of extra-uterine pregnancy:

The fecundated ovum may find lodgment at any point along the course of the tube, depending entirely upon the condition encountered. Numerous cases have been reported of ovarian pregnancy. That a primary ovarian pregnancy ever exists is doubted by a great many pathologists as it has been claimed that the fecundated ovum

can only find lodgment and develop, when in contact with mucous membranes derived from the Mullerian duct, and that when pregnancy is found in other locations such as the ovary or broad ligament that they are secondary to a ruptured tubal pregnancy. However, it is not my purpose in this brief paper to enter into a discussion of any of these controversial points, as they are of minor significance, in so far as the welfare of the woman is concerned, as the treatment for all is the same.

The two usual locations where the ovum develops is first and most frequently the outer end or ampula of the tube and the other at the uterine end. Sometimes it finds lodgment in the tube where it passes through the uterine wall and it then becomes an interstitial pregnancy.

The point at which the ovum develops has a very important bearing upon the question of prognosis. A pregnancy in the outer end of the tube is of minor significance, as compared to that of the uterine end. I have heard the late Dr. Joseph Price say that the outer end of the tube was the surgeon's end, and the uterine end the undertaker's end. The reason for this is that in pregnancy at the ampula a tubal abortion usually takes place and the bleeding is of minor significance. While at the uterine end, which is richly supplied with blood vessels, which rapidly enlarge during the pregnancy, rupture is attended with profuse and often fatal hemorrhage.

We now come to one of the most important phases of this subject especially to the sufferer, as the condition is so often unrecognized.

The family physician is the first to see these cases, and the life of the patient often depends upon his ability to recognize the condition.

Now it is not presumed, nor expected, that the family physician should be as quick to recognize this condition as would the surgeon. It is of such rare occurrence, that the general practitioner may not meet with more than one or two in a life time, and in rural communities not this many. In fact, I know many rural physicians who

have never encountered one. However, the family physician should be sufficiently familiar with symptomatology, to be able to recognize the condition, as a delay is often just as fatal as in acute appendicitis or intestinal obstruction.

What are the most prominent symptoms of an ectopic pregnancy? There are no absolute or pathognomonic signs, or symptoms, and in many cases they are so vague and uncertain, that a mistake in diagnosis is entirely excusable. However, there are certain symptoms which should always cause us to suspicion tubal pregnancy. One of the most important symptoms is frequently overlooked, and I want to lay especial stress upon its significance. I have learned to rely as much upon this feature in the case as any other one symptom, and this is the history of a period of sterility. While it is not the case in every instance, a vast majority of women will give such a history. Probably married for several years with no history of having been pregnant, and of not using an contraceptive measures to prevent pregnancy. Or she may have had a full term pregnancy or a miscarriage some three, five or ten years previously, but no history of pregnancy for a number of years. She then misses a period, probably two, and begins to suspect herself pregnant. After going over her time for a while she will begin to flow again, with more or less pain, or the pain as it usually does, precedes the flow for a day or two.

In other cases the flow begins first, and then rather severe cramping pains set in, the family physician is sent for, and he at once pronounces it an abortion. The usual time for rupture is six to ten weeks. The pain and flow continues, some fever develops; and the next thing considered is a curettage with only disastrous results, or at least no benefit. The curette will bring away a quantity of decidual tissue and the operator thinks all has been done that should be done, still the woman does not get well. Later as fever continues, a digital examination is made. The uterus is found fixed, a mass is found in the culdesac and a

pelvic abscess is diagnosed.

This is usually about what occurs, as by far the greater number of ectopics occur in the outer end of the tube and in place of the classical symptoms of rupture, a tubal abortion is taking place, or has taken place, with more or less intra-abdominal bleeding.

The classical symptoms are not so frequently seen, but a diagnosis is generally correctly made when they are seen. The missed menstrual period, the sudden severe pain, the faintness, pallor, air hunger and general appearance of the patient makes a picture so complete that diagnosis is generally easy.

However, the cases of tubal abortion which come on gradually with no alarming symptoms are the ones most frequently overlooked. In fact they are very rarely recognized early. The diagnosis is almost invariably abortion and treated accordingly.

To curette a woman who has a tubal pregnancy, no matter what point in the tube it is located, is a most dangerous procedure, as the manipulation may start intra-peritoneal hemorrhage that not being recognized may become fatal. There is usually some abdominal tenderness not so tender as in acute appendicitis, but a general diffuse tenderness or soreness. Temperature normal or subnormal, later slight fever may be noted. Blood count will show a high white count usually much higher than in appendicitis. Another very prominent symptom in the case of unrecognized tubal abortion or slight rupture, where the blood has been extravasated into the peritoneal cavity for some time is that described by Cullen in 1919.

This symptom is a peculiar, diamond shaped bluish discoloration around the umbilicus very much resembling an old contusion of the soft parts. It is best seen in thin individuals, being rarely seen in obese women. While this symptom is in no sense a pathognomonic sign, when taken into consideration along with the history of the case and physical findings, it is strong evidence of ectopic pregnancy.

One of the most positive signs is the pelvic condition revealed by vaginal examination, a boggy mass in the culdesac, with the uterus up under the symphysis and very tender. Frequently there will be a history of repeated mild attacks of pain and tenderness before the flow appears. Again the flow may be present before any pain is felt and in place of continuing for a few days, as in normal period, it keeps up for many days. Probably the flow will stop for a few days to again appear and continue as before.

This course of symptoms is brought about by repeated small hemorrhages taking place. As the ovum develops, the tube becomes distended, the embryonal structures penetrating the structures of the tube very much as does a malignant neoplasm, until finally the product of conception is pushed out of the fimbriated end of the tube, or the tube ruptures to a certain extent. There is some detachment of the decidua membranes; bleeding into the peritoneal cavity takes place. Tension in the tube is relieved and pain ceases. As the process goes on the embryo and membranes increase more and more in size, until finally the climax is reached, and complete tubal abortion or rupture is accomplished with the result that the graver symptoms are manifested.

In a pregnancy close to the uterine end of the tube, or in the uterine cornua, this train of symptoms is not so often seen. In these cases the rupture takes place suddenly. The muscular fibers surrounding the foetus stretch until there is finally a true rupture. In this location the blood vessels are large, the pain is sudden and severe and the hemorrhage is often immediately fatal if the condition is not recognized, and prompt surgical treatment adopted.

This is not the case every time. Often times after the woman has bled to the point of syncope the hemorrhage will stop. It then becomes a question as to just what should be done. There is a difference of opinion among the leading surgeons and gynecologists about the management of

these cases. Usually when the family physician arrives, the woman will have bled until she is in a condition of extreme shock and collapse, and it would appear that any surgical interference would prove fatal. Some men believe it best to give full doses of morphine and apply ice bags to the lower abdomen and wait for the patient to recover from the shock before sending her to the hospital, while others believe it safer to interfere at once. They believe that if stimulation is applied, and reaction takes place that hemorrhage will again become active and the patient bleed to death.

These are certainly cases which demand the most careful consideration and an exercise of the very best judgment. In any case of intraabdominal catastrophe, a watchful waiting line of treatment is extremely hazardous, and, taken on the whole, I think should be condemned. However, there are times when it might be the wisest course to pursue. One must simply exercise his best judgment at the time.

What happens to the foetus after rupture takes place? First, and most frequent, the foetal membranes are entirely detached and the foetus is incorporated in the large hematocele and dies. Sometimes nature will care for this collection of blood by absorption. Again, and most frequently, the mass becomes infected and a long septic course is run, with at times abscess formation. I have seen two cases where a localized abscess formed which discharged foetal structure upon incision.

Second, The foetal membranes may remain attached to parts of the tube, the foetus extruded into the peritoneal cavity where it continues to develop, becoming a true abdominal pregnancy. The foetus may continue to develop until full term, a spurious labor be experienced after which the child dies and is absorbed all but the bones or it may become calcified, resulting in a lithopedion. The abdomen gradually grows smaller and smaller until it reaches something near normal. Usually a mass will remain for years, should the woman live through the ordeal. These cases of abdominal pregnancy are not as a rule recog-

nized until labor or suspected labor sets in.

I have had the pleasure of seeing five cases of abdominal pregnancies. Two were not recognized as abdominal pregnancy until acute intestinal obstruction developed, and in one case an attempt was made to empty the uterus when it was discovered that the uterus was empty. In the other an attempt was made to induce labor, but the woman died before labor came on, and a post mortem revealed an abdominal pregnancy. So there were two cases out of five or twenty per cent of cases that developed acute obstruction. So in any case of pregnancy which shows up symptoms of acute obstruction it will be well to consider abdominal pregnancy.

If a correct history can be obtained it will generally reveal that early in the pregnancy there had been trouble. A history of acute abdominal pains and tenderness which could be interpreted as a ruptured tubal pregnancy or a tubal abortion. After which pregnancy will continue as practically a normal pregnancy and will not be recognized until labor sets in. The treatment of extra-uterine pregnancy is always surgical as no other treatment is of any benefit. It all hinges upon diagnosis. If the diagnosis is made before or at the time of rupture, the operation should be immediate. The tube should be removed and pelvic cavity cleansed of all clots and debris. It is an open question whether or not both tubes should be removed. In one of my cases there was an unruptured pregnancy in the opposite tube. It is not an infrequent occurrence to have a second extra-uterine pregnancy after removal of one tube for the same condition on the opposite side. However, if the woman has no children, and the other tube is apparently normal, I think it best to leave the unpregnancy with the hope of the woman becoming pregnant and having children.

In abdominal pregnancy it is again a question as to just when to operate. It is by far the safest plan, for the mother, to wait a few weeks after spurious labor has been experienced. After the death of the foetus circulation through the placenta is

soon obliterated, and can easily be removed at operation. On the other hand, if it is the mother desire to take the chance to save the baby, this may be done, and operation undertaken before or at the time, spurious labor comes on. At this time it is usually impossible to remove the placenta on account of the profuse hemorrhage which is encountered. It is then necessary to leave the placenta to be cast off through the abdominal opening. This is quite hazardous as it is very difficult to prevent infection and sepsis.

I will not bore you further but will close by again stressing the point in diagnosis in the period of sterility. When any woman presents herself, suspecting pregnancy after a long period of sterility, either married for several years without becoming pregnant, or several years since her last pregnancy, it is always wise to make a careful examination to ascertain whether or not it may not be ectopic. The very fact that she has had a long period of sterility presupposes some pathology somewhere.

Again in all cases of suspected early abortion, it is very important to make a careful pelvic examination to exclude tubal abortion before instituting any radical procedures, as curetting a patient with a tubal pregnancy is a dangerous procedure.

DISCUSSION.

DR. WILLIAM D. HAGGARD, Nashville: I wish to commend the very excellent paper of my young clansman.

I was much struck by the differentiation that Dr. Sheddan makes between the two types. The cases of so-called tubal abortion are never urgent. We never need to get up in the middle of the night to operate on those cases. They never bleed to death. The ones that bleed to death are the ones in the uterine cornu. They tear through the uterine artery when they rupture and that is the cause of the hemorrhage. That is the case you do not get to quickly enough. It is a question whether to operate or not, but many die even if you do. In these days of transfusion we may be able to save them by this method. As was said long ago, this end is the surgeon's and the other is the coroner's (indicating on slide). The first case that was recognized in this city was a woman who had an attack of sudden, acute pain in a

department store, fainted, was carried across the street to a doctor's office, but died before they could get her there. I have seen several cases in which the woman bled rapidly and was exsanguinated, but we recalled them with blood transfusion. In one instance the patient died on the fourth day of pneumonia.

Another thing that should be stressed is the pitiful bleeding, in which women will miss a period and then begin to bleed just a little. A little blood from the vagina should always make one suspicious. There are the cases that are thought to be abortions, and are often curetted without taking care to feel the hard mass on the other side in the cul de sac.

In the abdominal pregnancies I have had one case where the fetus lived for eight months. There was milk in the breasts, but the patient said she still had bleeding and the doctor curetted the uterus and found it empty. I was called in and said perhaps it was an extrauterine pregnancy. This woman had pus around the fetus and I dealt with that as with an ordinary pelvic abscess. I made a vaginal incision and drainage, and then felt a dead, macerated fetus, after I had evacuated a quart or two of fluid. Through the small cul de sac I removed the arm and removed the fetus with a forceps, through the cul de sac.

In another case the fetus lived to maturity and then died and was absorbed, except the bones. The bones were passed through the bladder. With great pain and distress the woman would work through one of these bones, usually a long bone. We operated and made a vesico-vaginal fistula and removed the bones that could not come out through the fistula. We subsequently closed the fistula, with good recovery.

I think the thing to be stressed is that we must suspect a dozen or twenty cases of extrauterine pregnancy before the diagnosis will be correct. If we remember the points laid down by Dr. Sheddan the diagnosis will not be difficult. In the acute cases with a little temperature, and in the almost acute abdomen we are always put to it to know whether it is salpingitis or something else. If we remember Dr. Sheddan's little points we are almost sure to make the diagnosis. They are not acute after two or three attacks of pain and can be studied. After the condition becomes acute I feel that we should remove the fetus by opening the abdomen.

DR. S. D. HARDISON, Lewisburg: I have not heard the doctor's paper very well, but do not see how he got any pleasure out of seeing five ectopic pregnancies. I have seen one and had no pleasure in it whatever. The case I saw was a score of years ago. The patient was a beautiful young woman, a niece of a very reputable physician, Dr. Alf Jones. She was seventeen miles from him and Dr. Vavin was called and prompt-

ly diagnosed the case as one of ectopic pregnancy. He told her mother the diagnosis and said he wanted help to do a laparotomy. He sent for me and my so nand we got there as promptly as possible and realized that his diagnosis was correct, and there was the woman bleeding to death. The mother would not consent to our operating. The girl's husband said for us not to pay any attention to her mother but to go on and save her life, if possible. The mother insisted that Lena had had this condition before and that we should not operate until her uncle arrived, and said it was right for us to do so. The girl died before her uncle arrived, from rupture of the Fallopian tube. We asked for a post-mortem. The fetus, I think, was about four months. The body was about three inches long and there was the plain rupture and the bleeding artery, and the plainest picture of extopic rupture that produce death that you can imagine.

I think Dr. Sheddan did well to bring this paper before us common practitioners. We should know when a woman is in danger of death, but in this case I speak of I think nothing could have been done except a laparotomy, with ligation of the artery.

Another case was that of a colored woman and that case happened during the Civil War when doctors were not so plentiful. She was supposed to have about completed her extopic gestation and to be ready for delivery. A pretty good doctor was called in and then another, and they thought it was a tumor of the abdomen. That was correct, but it was a ruptured ectopic pregnancy. She got up and did pretty well as a slave, and after a time there was a shrinkage of the mass, and after this a softening. After that another doctor came into the neighborhood and he thought that perhaps it was an extrauterine pregnancy. He operated and found the bones of an encysted fetus. She had carried it for six or seven years and it should have been removed by operation.

I think none of us are excusable when a woman has symptoms of extrauterine gestation if we do not relieve her by operation.

I think the paper was very timely and believe attention should be called to this condition, as Dr. Sheddan has done in a very gentlemanly, nice way.

DR. LEON L. SHEDDAN, Knoxville (closing): I have very little to add, except that I wish to direct your attention to the class of cases Dr. Haggard spoke of, those patients who have repeated attacks of pain. They are nothing more or less than attempts at rupture, attempts at abortion. A woman has "the cramps," will get over them and go on for a few weeks and have them again, until a considerable foetal develop-

ment takes place, perhaps three or four months, when final rupture or tubal abortions occur.

The one particular symptom I wish to call to your attention is the period of sterility. This is not a positive sign, but many women come to us giving a history of sterility for a number of years. They have been married for a number of years and have no children, then they will miss a period, have a little trouble and a little cramp and begin wasting. Do not jump at the conclusion that this is an ordinary case of abortion without making a careful examination.

I have seen one case since this paper was written and the rupture was at this point (indicating on slide). This patient was three months pregnant and had gone eleven years since the last pregnancy. She had an attack of pain when she had gone over her time only six weeks. This was diagnosed as acute appendicitis and the patient was put to bed. Six weeks later she went down with rupture of the uterine cornu. When the doctor was called she was pulseless and looked as if she would die in spite of everything. I saw her at daylight. We gave some morphin, elevated the foot of the bed. After six hours she was taken to the hospital and rapidly operated upon. I never saw so much blood. The fetus, three months, was lying free in the peritoneal cavity, and there was active bleeding at this particular point, indicating in chart. We evacuated the mass as rapidly as we could. The woman had a stormy time for several days, but left the hospital on the twelfth day in good condition. As Dr. Haggard said, we do not have to get up in the night to rush these patients (pointing to chart) to the hospital, but if they have this large amount of blood poured out they will have organized adhesions after a time, and later on get infection of this clot and are likely to have all kinds of complications following.

The thing that prompted me to write this paper is that things go in waves all over the country. I remember a wave of ectopic pregnancy some years ago, then a wave of appendicitis, and these passed all through America. We recognize these things and then we forget the wave. I do not think we have heard a paper on extrauterine pregnancy in this Association in ten years. It is something we have not thought much about in late years. The reason it has been so forcibly impressed upon me is the large number of cases that come to me that have not been recognized, and the patient has been curetted or mistreated. Rarely is this condition here (indicating) mistaken, but tubal pregnancy and abortion, where the patient goes on and has many attacks of pain, are not recognized, at least not as they should be. The condition is no more difficult to recognize, and no easier, than many other types of abdominal pathology. I thank you.

STRICTURE OF THE URETER AS A CAUSE OF INTRACTABLE BLADDER SYMPTOMS*

GEO. R. LIVERMORE, M.D., Memphis.

ALTHOUGH stricture of the ureter may be present without definite symptoms, irritation of the bladder occurs in the majority of cases. Cystitis per se is rare. We can almost say that it never occurs except from direct infection, careless catheterization or the passage of contaminated instruments. Therefore, if cystitis does not clear up after a few bladder irrigations, the condition is due to infection higher up or lower down, to obstruction in the urethra or bladder neck or to the presence of tumor or stone in the bladder. Hunner (1) says stricture of the ureter is due to focal infection. Tuberculosis may also be the etiological factor and some are congenital (2). I believe too that infection coming from the ureter above may infect the ureteral wall, (just as gonorrhoea infects the urethral mucosa), produce ulceration with scar tissue formation and later cicatricial contraction, thus giving rise to a true stricture from within, by calculi and from without, by presence of tumors or the pregnant uterus may give rise to the same condition.

When a stricture of the ureter has once formed, there is back pressure on the kidney with stasis and consequent infection, if the latter has not already been present. This infection descending the ureter infects the bladder and as I have already stated, in the majority of cases gives rise to irritability.

Stricture of the ureter is of such frequent occurrence, it should always be considered as a possible cause of cystitis. This is being demonstrated to me daily, and is especially impressive when I have been able to locate a ureteral stricture in patients

who have been under treatment for irritation of the bladder by competent urologists, without relief and who have been entirely relieved by dilating the stricture. In another instance, a patient who was under my treatment for ureteral stricture having had two dilations with marked benefit had to return home on account of the illness of her mother. I wrote a prominent urologist to continue these dilations, but he thought my diagnosis incorrect and failed to follow my advice, with a prompt return of her symptoms, which were later relieved by another urologist who heeded my suggestion. This is not said in a spirit of boasting, but simply the statement of facts which any of you can verify if you will only examine the cases of cystitis that do not clear up under bladder irrigations. You will be surprised at the number of ureteral strictures you will find.

Hunner has now seen more than 2,000 cases and I am seeing so many, that my technician recently remarked that she believed stricture of the ureter was universal. Hunner (3) says at least two-thirds of the patients with ureteral stricture have infiltration of the urethra as well. This is undoubtedly true and accounts for the improvement so often experienced following cystoscopy and ureteral catheterization in which negative kidney findings lead one to imagine that there is no pathology above the bladder. The temporary relief being due to the dilation of the urethra by the cystoscope. I have a good example of this which occurred when I was a skeptic about frequency of ureteral stricture. The patient a woman fifty-eight years of age, had been a sufferer from irritable bladder for many years. She had been subjected to several repair operations and a laparotomy

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without benefit. I cystoscoped her and found a trigonitis with negative urine from each kidney and as a No. 6 catheter had passed easily to each pelvis, I felt sure there was no obstruction in her ureters. The urethra was markedly infiltrated so believing this to be the etiological factor, I dilated the urethra and was delighted at the wonderful improvement in her condition. It was only temporary however, and despite continued dilations, she would never be entirely free from symptoms. Finally I made a pyeloureterogram and was surprised to find a stricture of her left ureter.

Under dilations of the stricture she has been entirely relieved.

Negative kidney findings are no index to the condition of the kidneys and ureters, just as the urine in chronic nephritis with kidneys almost destroyed may contain no albumin or casts. Therefore, in cases of irritable bladder, where the urine shows little or no abnormality, do not consider it a case of bladder neurosis or due to pressure or dragging on the bladder by a misplaced uterus, until you have examined the ureters for stricture.

Unfortunately, all cases of stricture cannot be cured. Hunner (4) states that he has cured only twenty-nine per cent of his cases and my results compare favorably with him. This is indeed a very poor showing for when we cure only twenty-nine per cent of sufferers from ureteral stricture, a condition that is so universally present, it indicates the necessity for more determined effort and study on our part and a plea for a combined effort and intensive attack by all urologists upon this malady which is causing so much morbidity.

Even though we can cure only twenty-nine per cent of these cases, I am glad to tell you that, according to Hunner (4), about fifty per cent more can be greatly improved and another fifteen per cent improved making a total of ninety-four per cent cured or improved. This is more encouraging but still shows that we have not learned all there is know about ureteral stricture, or as Hunner remarked to me, "We have merely scratched the surface,"

there is a fertile field to be discovered by him who is willing to devote his time and study to this interesting problem. The diagnosis is made by the wax bulb and by the pyeloureterogram. I prefer the latter.

The treatment is dilation of the stricture or strictures, with the bulb, with increasing sized bougies or with multiple bougies or catheters, followed by the injections of silver nitrate. All are good and each has its advocates. I prefer increasing sized bougies or the passage of two or more catheters. The passage of a No. 6 catheter followed by the passage of the Walther dilator by the side of it gives a wide degree of dilation, which if not sufficient can be increased by the passage of another bougie.

Conclusion: 1. Ureteral stricture is a definite pathological entity.

2. It occurs more often than any other urological condition.

3. It is one of the chief causes of intractable bladder symptoms.

4. It is amenable to treatment in the majority of cases.

5. There are many cases that cannot be cured.

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DISCUSSION.

DR. J. H. SMITH, Memphis: I think there is no doubt that stricture of the ureter may be congenital or traumatic, or due to focal infection. Any of the three may hold good. I do not think we can attribute many strictures of the ureter to traumatic origin. It looks more than probable that if we can have congenital stricture of the urethra from an infectious cause, either embryological or from some infection in utero, that we could have stricture of the ureter from some such cause as that. Of course, we know we can have traumatic stricture caused by the passage of stones, trauma, or something of that kind.

Dr. Livermore did not take up one point I wish to ask about. That is the average age at which

he has seen stricture of the ureter.

I do not think we should attribute all cystitis to stricture of the ureter, even though we have a large percentage. The cystitis is caused by a descending infection due to blockage of the kidney. In those cases there will always be an infection in the kidney. We must not overlook cystitis from tuberculous bladders, infections from above, tumors and so forth due to infection in the bladder, and the other infectious causing trabeculae, sacculations, and so on.

DR. JOSEPH H. SMITH, Memphis: The question of the undescended testicle has been a problem for some time and I frequently am asked what I do with them. I was glad to hear the essayist say that the only one he treated correctly was the one he took out. It is my belief about undescended testicle. The idea is that the undescended testicle is a non-functioning organ, and of no use to the man. If the testicle is early brought down, while the individual is young, and put in the scrotum, if the vas is long enough, it is possible that it may become a functioning organ later on, but if the patient is more than twelve years of age it is a question whether or not it will ever be of any germinating service. My experience is that if we attempt to bring down an undescended testicle we have to take them out a few days later because of swelling, pressure and edema.

DR. THOMAS D. HALL, Nashville: I agree with Dr. Livermore that this is a very common cause of irritable bladder, especially in women where we cannot find any other pathology to account for the condition. I think one thing that brings about stricture in the lower part of the ureter is kink and vesiculitis. I believe this is responsible for stricture in the lower portion in quite a number of cases. I enjoyed Dr. Livermore's paper very much.

DR. PERRY BROMBERG, Nashville: The tendency on the part of most urologists to catheterize the ureters and to finding that a No. 5 or No. 6 catheter will pass with normal urine from both kidneys is apparently sufficient evidence to say that it is a neurosis and that no pathology exists. I confess that when I heard Dr. Hunner report 200 cases of ureteral stricture I was of the opinion that they were not so frequent, but I have come to the opinion that Dr. Livermore and many others have reached, that it is a definite entity and that it will be found much more frequently if we look for it. I think if we inject the ureter and put the patient in the semi-upright position we will find stricture, just as we have found congenital deformity to be much more common than we formerly thought. I do not be-

lieve that focal infection or extra-ureteral infection, such as seminal vesiculitis are so frequently responsible for ureteral stricture as is trauma. We frequently get a history of these patients having passed a stone a number of years before and I believe this trauma is more frequently responsible for the resulting stricture than is either the focal infection or the congenital type of stricture. That we do have congenital strictures there is no doubt, but that we also have strictures from infections and trauma long since passed there can be no question.

I do believe that in the cases where no definite pathology can be determined we will frequently get very excellent response to dilatation of the ureter.

DR. J. H. SMITH, Memphis: I think there is no doubt that stricture of the ureter may be congenital, or traumatic, or due to focal infection. Any of the three may hold good. I do not think we can attribute many strictures of the ureter to traumatic origin. It looks more than probable that if we can have a congenital stricture of the ureter from an infectious cause, either embryological or from some infection in utero, that we could have stricture of the ureter from some such cause as that. Of course, we know we can have traumatic stricture caused by the passage of stones or something of that kind.

Dr. Livermore did not take up one point I wish to ask about. That is the average age at which he has seen stricture of the ureter.

I do not think we should attribute all cystitis to stricture of the ureter, even though we have a large percentage. The cystitis is caused by a descending infection due to blockage of the kidney. We must not overlook cystitis from tuberculous bladders, infections from above, tumors and so forth due to infection in the bladder, and the other infections due to trabeculae and so on.

DR. GEORGE L. LIVERMORE, Memphis (closing): In answer to Dr. Hall, I feel that seminal vesiculitis is a frequent focus of infection for ureteral stricture. As I said in my paper, Dr. Hunner states that focal infection is the cause of ureteral stricture, and I stated that I do not know whether it is a primary infection of the ureteral wall itself or whether the infection coming down the ureter secondarily involves the ureteral mucosa, causing ulceration, scar tissue formation and contraction. I do believe that the trauma caused by stones, and also that of the pregnant uterus which constantly crushes a ureter against the pelvic brim is very likely to give rise to the formation of ulcer and cicatricial contraction.

A PLEA FOR THE EDUCATION OF THE DEAF CHILD*

P. M. FARRINGTON, M.D., Memphis

WALTER H. PAGE, writing to Edward M. House from England, 1913, speaks of the good news House always sends and remarks, "The volume of silence that I usually get is oppressive." He tells this story to illustrate his point:

You remember the old nigger that wished to pick a quarrel with another old nigger? Nigger No. 1 swore and stormed at nigger No. 2 and kept on swearing and storming, hoping to provoke him. Nigger No. 2 said not a word but kept at his work. Nigger No. 1 swore and stormed more. Nigger No. 2 said not a word. Nigger No. 1 frothed still more, nigger No. 2 still silent. Nigger No. 1 got desperate and said, "Look here, you kinky-headed, flat-nosed, slab-footed nigger, I warns you 'fore God don't you keep givin' me none o' your damned silence." The story illustrates only too well the attitude of the medical profession regarding the education of the deaf.

Comparatively few physicians have interested themselves in the deaf child. Most of us are simply careless of their welfare and are not informed of the educational advances made in their behalf. We are perfectly willing to acknowledge without shame our ignorance of the entire subject. Although doing ear work for many years I did not give this phase of the subject careful consideration until the past few years. At a meeting of the American Academy of Ophthalmology and Otolaryngology held at Memphis, Goldstein, of the Central Institute for the Deaf at St. Louis, brought several pupils and teachers to demonstrate to the society the value of the present-day methods in the education of the deaf by purely oral methods. All of the members present were astonished at the

ease of communication by the spoken language and the normal bearing of these children when in contact with others. We were all quite complimentary to the doctor and gave him our unqualified endorsement of the wonderful work he was doing. This did not at all satisfy Goldstein, who made the point that all physicians interested in disease of any nature whatsoever should give these unfortunate children a share of their consideration. For the past three years I have made an effort to establish a school for these deaf children in Memphis. Our first attempt at a private school was abandoned, for financial reasons, after one year. I thereupon discussed the matter with the public school officials, making a request that they supply a room and one teacher for the deaf children. The Parent-Teacher's Association were also interested in the matter and we now have a deaf department as a part of the regular school system in our city. I have abstracted from the literature enough material to give you an idea of the present-day thought regarding the education of the deaf.

"Attempts at educating the deaf have been under way in a desultory manner for the past 200 years. The sign language was used almost exclusively in the earlier days. The first school for the deaf to be opened in the United States was in 1817 at Hartford, Conn. The work done in that institution was almost exclusively carried on by sign language. Since that time great advances have been made and there are now three methods of teaching the deaf. The older method is by the sign language exclusively, the newer method and, I think, the best method, is known as the oral method. A third method, which is used in some institutions, is a combination of these two. The experience in the care of the deaf has been far greater in Europe than in America, and at present most of the

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work done in the European schools is the pure oral method. The number of pupils in the 423 European schools reaches the total of 20,273. Eighty per cent of these children are taught by the oral method. In the United States we have 12,000 deaf pupils and the large per cent of these pupils is taught by the sign language, only twenty-two per cent being instructed by purely oral methods."

"The past experience in Europe and their preference at this time for the oral method should cause us to consider very carefully our choice of schools before advising parents where to send their children. The objection to the sign language is that the graduates of such schools can converse only with other deaf persons who have the same training or with their close friends and relatives who have a limited knowledge of the sign language. On the other hand, the oral method, while more difficult to learn, actually teaches the deaf child to speak and to become proficient in lip reading to such an extent that they can carry on conversation with all persons with whom they are thrown in contact. The danger of the combined method with the child is that the sign language, being more readily acquired, is used while the child is still in the institution to the exclusion of the oral method."

"There is, probably, only one way in which the most satisfactory oral work possible can be done in a school in which there must, for any reason, be manual classes, and that is to make two schools of it, both under the same management, but the oral and manual classes having separate classrooms or different hours, and separate living quarters, and never coming in contact with each other at any time during the day. The largest school for the deaf in the world, the Pennsylvania Institution, in Philadelphia, has in this way been changed from a manual to a purely oral school, but the process occupied more than twenty-five years. The beginning was made by separating the school into two parts, a small oral department and a large manual, the pupils in the two departments never associating with each other in work or in play.

Little by little, as the results of the oral work proved themselves satisfactory, the size of the manual department was decreased and the oral enlarged, until now there are no manual classes, and all communications in and out of the class room, in shop work and recreation, is spoken. Dr. A. L. E. Crouter, the superintendent, in his annual report, writes as follows: 'In the intellectual department instruction has, in the main, been conducted along the same lines as in previous years, the only noteworthy changes being the increased attention paid to lip-reading and the entire absence of all forms of manual methods. These changes are believed to have proven helpful in the work. Oral methods alone are now pursued in the instruction of all our pupils and they are found quite adequate to their best advancement. In saying this, we do not claim to be able to make orators or public speakers of our pupils, but we do claim to be able to give them a good general education, and in doing so to train their powers of speech and lip-reading to the extent of enabling them to communicate freely with their relatives and close friends, and to express their thoughts in fairly correct English on all topics of general interest. Except in a comparatively few cases more than this may not wisely be claimed for any method. Any method of instruction that will give the average deaf child a fair command of his native tongue, a fair acquaintance with the subjects that constitute a fair English education, and the power to speak intelligently and to read the speech of others, is a good method, and any method that falls short of this, by whatever name known, is not a good method. We have dropped manual methods because we have found them unsatisfactory, and because we believe they interfere with the best progress of our pupils in the acquisition of speech and lip-reading and in all regular branches of study.

"Thus once and for all, in the most conservative and practical way has the country been shown how it may, if it wishes, gradually abandon the older and less de-

sirable method for that which is more in keeping with modern ideas of education. The feasibility and desirability of this change having been demonstrated beyond question, without hurry and without prejudice, purely as a matter of indisputable fact, the same result can now be obtained in any other school in a period of not more than eight years. All that is necessary is the willingness on the part of the citizens, expressed by legislative action, to defray the slightly greater expense, and the placing in charge of a competent and experienced man or woman. Eventually this will be done, but not until a considerable body of public opinion is created by informing the people of the advantages possible to their deaf children, at present open to those in some states, but denied to those of others less enlightened. A great step towards this end will be accomplished if education can ever be removed from the sphere of politics, and appointments made on a basis of educational efficiency and not political service.

"For educational purposes, deaf children and young people should be divided into five general classes, and every physician should be familiar with the necessities and possibilities of each class. Each of these five general classes should be in turn divided into two classes, those of normal intellect and those of subnormal intellect. The placing of deaf children of subnormal intellect in classes with children of normal intellect should not be tolerated any more than it would be in the case of hearing children."

"Class 1—The totally and congenitally deaf or those adventitiously deaf before three years of age. They will be dumb as well as deaf unless they are given special instruction in speaking, and this instruction should be systematically begun between four and five years of age in the case of the otherwise normal child. The subnormal child may wait a little longer. The deaf child beginning at four or five years of age can be given in any school for the deaf in the world a good grammar school education in the 'three R's' and in

history, geography and industrial training. In addition to this he can, in any of the good oral schools, be given a degree of proficiency in speaking and understanding the speech of those with whom he is thrown in frequent intercourse, to make him entirely independent of any form of manual communication."

"In the case of deaf children of Class 2, those deaf after three years of age, the most essential thing for the parents to know is that extremely prompt measures must be taken to prevent the loss of the already acquired speech. The absolute necessity for immediate action cannot be too strongly impressed upon the parents or guardian of the child. Extraordinary efforts should be made to induce the child to talk as much as possible. If the child has learned to read before hearing is lost he should be encouraged to read aloud a great deal. The greatest care should also be taken to encourage him to watch the lips and his friends should be sure that his eyes are directed to their lips before they speak to him. They should also speak a little more deliberately in addressing him for the first year, but carefully avoid exaggerated and unnatural mouthing of words. Perfectly normal speech should always be used. While special instruction may not be required at once, it is very desirable that the parents should seek advice and guidance of some experienced oral teacher of the deaf the moment they know that hearing has been impaired. If proper methods are employed with sufficient promptness, the transition from comprehending speech through the ear to reading it by the eye may be made so gradual and the natural speech of the child may be so well preserved that there will be but little interruption of educational or social activities. Without this prompt attention, however, the child of eight, or less, will become a deaf mute if hearing is lost, and have to be treated in accordance with those of the first class. Unfortunately there are many such in schools for the deaf throughout the country."

"Class 3—Children who are profoundly

but not totally deaf. These are too deaf to attend the ordinary public or private school. They retain some remnants of hearing which can be utilized in teaching them to modulate their voices, and in comprehending language spoken very loudly near the ear. There are many pupils in the schools for the deaf with a sufficient power of sound perception to be taught to discriminate vowel sounds, and therefore words, spoken loudly near the ear, who have never so comprehended language because they have never been taught to do so.

"Class 4—Those both blind and deaf require a somewhat different treatment from those who are only deaf, and also even more individual attention. Manual means of communication must be very largely employed in their education, though they can be, and should be, taught to read the lips of speakers with the aid of their fingers, and be taught to speak themselves even to those who spell manually to them. In general each child of this class requires an individual teacher. The most famous case is probably that of Miss Helen Keller, who through the devoted labor of Miss Annie Sullivan, and later of other teachers, has become a scholarly, cultured woman of rare intellectual powers and sweetness of character. Miss Keller has a far more extensive education and a wider knowledge than the average young woman college graduate and uses only speech in her communication with those around her, though others usually spell manually to her. Miss Keller, however, reads the lips with considerable facility by the aid of her fingers. There are now many deaf-blind children under individual instruction in schools for the deaf and schools for the blind."

"Class 5—The slightly hard of hearing pupils in the regular public schools of the country is much larger than is usually known, and almost entirely neglected. They are in no sense candidates for a special school for the deaf, and yet they are too deaf to work properly in classes of forty or fifty to a single teacher. They usually come gradually to be classed as dull, stupid,

backward children. Sometimes they are, but often they are of fully average, if not exceptional ability. All that is needed to enable them to do the regular work of the graded school in the ordinary way is to give them more individual attention in smaller classes. There should be provision for such a class in every large public school, and it should not exceed fifteen pupils. It has been found that among the 600,000 school children in New York City, one in each hundred has hearing sufficiently impaired to be severely handicapped under the ordinary condition of the city's schools. In each of these schools there are usually from twelve hundred to two thousand pupils, so that a class of from twelve to twenty should be provided in each school building. Great care should be taken that no stigma is attached to such a class. The arrangements should be such that they would not be looked upon as feeble-minded or defective, otherwise much difficulty would be experienced in carrying out the plan successfully. They should do exactly the same work in the same time as is scheduled for the larger classes."

Those desiring detailed information on any point touching the welfare of the deaf, aside from medical matters, can obtain it from the following sources: The "Volta Bureau, 35th Street, N. W., Washington, D. C., for the Increase and Diffusion of Knowledge Relative to the Deaf," and the American Association to Promote the Teaching of Speech to the Deaf, also of Washington, D. C., both established by Dr. Alexander Graham Bell, the distinguished inventor of the telephone.

In conclusion, I make this plea, that we have less of your silence. When these children are brought to your notice interest yourself sufficiently to inform their parents of the educational advantages now at their command, to the end that their minds may be cultivated and they may be trained for useful occupation and take their place in the community even as you and I.

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CHARITY CLINICS

ROBT. B. WOOD, M.D., Knoxville

TIME and experience have proven conclusively that medical aid for the poor is a necessity for any community having an urban population, and the means proven to be the most economical and most efficient is through the agency of a clinic, financed either by public donations or taxation. That the latter method is preferable there can be no doubt, nor can there be any discussion of the fact that the city should direct the expenditure of all funds ascribed to the relief of the needy, by the direction of a governing board.

It also seems desirable that municipal clinics should affiliate where possible with state and public health agencies in order to eliminate overhead expenses, to have a central organization, working as a unit under a single administrative head. In rural communities this does not constitute such an enormous problem as in cities.

There can be but little doubt but that the medical unit of any clinic should work in connection and co-operation with the other relief agencies of any city, to prevent any duplication of work in respect to social service department and to recommend aid to the needy outside of medical attention. Where possible it seems desirable that the clinic be situated in connection with the general hospital. First, it prevents considerable amount of delay in obtaining valuable information as to the patient's past record, in those cases going from clinic to hospital and vice versa, it avoids unnecessary duplication of examinations especially in regard to laboratory work which is expensive to the city as well as time consuming on the part of employees and, third, it gives valuable training to the internes of a hospital to be able to follow cases for periods of time.

Many objections have been made to the existence of clinics, not because of their

use or work, but because of their abuse. The chief offense in this line is the application for aid by those who are able to pay for treatments and by those who have contracted a disease, generally venereal, as a result of their own folly and who lack the initiative to earn means for providing private attention.

The first of these objections may be easily adjusted by the fixation of an income below which a patient may be eligible for free medical attention. The patient's statement should be checked by a social service worker, and of course misrepresentation should automatically bar him from participation in the charities. In cases of doubt agreement may be reached by the social service department and the chief director of the clinic who should be a person not anxious to present a long report, depicting the great benefits and work of the clinic. Not how many cases may one find to treat but how many worthy cases are relieved should be the basis of work, and compensation for such relief should be the knowledge of a deed done and not dependent on the advertisements of our daily newspapers.

The growing fear of charitable relief and public health work resulting in the establishment of state medicine is no longer latent. Public health must be state directed and most physicians realizing that preventive medicine cannot be practiced by the individual until there is demand for such, raise no objection to the preventive means of state departments. It is unfortunate that the practice of preventive medicine has not advanced among the private practitioner with a pace equal to that set by our knowledge and unless this is applied to practice, the state will eventually, if not already in instances, take steps to fill the gap.

A third objection to treatment administered by clinics is the inadequate length of time spent by those having venereal disease. This objection is also common to private practice, but can be readily eliminated by regarding persons with such diseases as a menace to the public at large and punishing those refusing to continue with advised procedures.

There are certain aspects to be considered from the moral standpoint, in regard to services received without effort of repayment. Many people adopt the attitude that continued service should be forthcoming for the asking and apparently make no effort toward economic improvement. These, with the mental defectives are a group highly undesirable, but nurtured by the clinics continue and rapidly multiply. Under the old system of survival of the fit, these undoubtedly would lose in the race, and we would have eventually a stronger and more substantial group.

Temporary benefit only is the rule rather than the exception in tiding over families during sickness. Medical aid alleviates but does not cure the cause of such economic straits, and rarely is one able to regain firm financial footing as result of aid rendered through a clinic.

The condition of such families are the result of their own efforts, in many instances. While it is much nicer to believe they are only temporary victims of grim tragedy, yet we know they have been for generations and will more than likely continue to be. A family's ideals are much like the individuals who constitute the family and the long work of heredity and environment will not be uprooted and replaced by a new psychology produced by the medical department.

While ideal to believe "all men are created equal" we know such remarks are only representative of the thoughts of leading philosophers of the time when the statement was made, and men are no more equal than men and animals. Neither are the opportunities of life presented to each individual the same, nor are the faculties for choosing alternate courses in critical

periods of existence the same.

Environment produces small changes indeed and only temporary ones as compared to those of heredity. It is environment that often brings out hereditary possibilities, so it is "the aim of service to produce a suitable environment which may present more favorable alternatives from which an individual may choose and to this extent may we be held liable for what another becomes."

So, it is for this reason that medical clinics should not stand alone, as a unit, in relief work but in connection with other organizations in hope of stabilizing the economic condition of those served. While the present adult membership may suffer somewhat we should aim at the relief of the unborn, by providing an environment conducive to the development of rational social and ethical habits.

In speaking of the unborn races, I wonder if we are not often sentimentally foolish as individuals and a government in allowing the advent of a race known before their arrival to be doomed to a life of disease, poverty, or to an existence as an inmate of an institution or an object of charity. These groups are extremely prolific when outside of institutions, and one may expect little observance of the rules of contraception, even when known by this element. Refusal of issuance of marriage license to the mental defectives would control to a small degree, and sterilization of every inmate of a hospital for the insane who is adjudged as most likely to produce mentally defective children would aid materially.

The moron group should be taught to prevent pregnancy, as well as the mother with an already large family and yet in the child-bearing age, who is being aided by charity, and any family should be prevented in all with active disease such as tuberculosis, chronic nephritis, certain cardiac disturbances, and in syphilitics.

Seeing below the surface and preventing the occurrence of poverty will aid in solving the clinic problem. The treatment of symptoms is not scientific treatment in medicine, so why apply it to the ills of

society. There being a direct relationship between the economic situation of a city and the popularity of the free clinic, it naturally follows that the former condition be remedied.

This involves many factors and one of which immediately revolves back on health conditions, not so much on immediate relief but on preventive medicine. Out of all the money spent in public health what proportion goes to prevention and I ask this especially in regard to mental diseases. While insanity is already America's greatest industry at present, her laws and her efforts to prevent its increase insure for her an even greater prosperity.

Unfortunately for all no line of demarcation exists for forms of treatment and reviewing the problems of charity as a whole who knows what is best. The humanitarian viewpoint may not in the end be what is best for our country. Religious beliefs, superstitions and teachings do not always coincide with our better judgment. For those actively participating in relief work they cannot go far astray if they are "guided by reason, with justice as an aim, and human happiness their religion."

Below are given a few statistics relative to the charity clinic of the Knoxville General Hospital. This does not apply to the report on the Wasserman test as this is done at the Public Health Laboratory, the material coming from the Health Center and Venereal Clinic, institutions not connected with the Out-Patient Department.

OUT-PATIENT DEPARTMENT.

Knoxville General Hospital, Knoxville, Tenn., from November 1st, 1924, to November 1st, 1925:

Total number of new patients.....	1,200
Total number of visits	6,852
Average visits per patient.....	5 1/2
Total number of admissions to hospital..	254
(Record only kept from Jan. 1, 1925)	
G. U. service	8
Gyn.	8
Pediatrics	7
T. and A.....	80
Nose operations	3
Surgical service	39
Medical service	18
X-ray service	91
	254

Total number of pairs of glasses given... 29

Out of the number of visits by patients, 940 of those visits were for the dental department.

Out of 100 patients social history charts, 12 patients were found to be ineligible. Upon averaging the number in family of the other 88 patients we found they average seven to a family. Upon totaling the gross income of these eighty-eight families and averaging it we found each family averaged \$17.88 weekly.

Patients are eligible to the Out-Patient Department when:

Two or more in family with income of \$15.00-18.00 per week, or \$75.00 per month.

Five or more in family with income of \$25.00 per week, or \$100.00 per month.

Eight or more in family with income of \$31.00 per week, or \$125.00 per month.

Regardless of number of dependents, no family with income of over \$150.00 is taken.

Above figures are based on U. S. Department of Labor Minimum Quantity Budget, U. S. Department of Labor Tentative Quantity and Cash Budget, Buffalo, New York Dispensary, Rochester Dental Clinic, National War Labor Board.

An hourly, daily or weekly rate can never be accepted as affording an absolute basis for computing income. They may have had their present job or present rate only a few weeks, or may have had irregular employment and hence not earn the amount implied by the weekly, daily or hourly rate.

Variations should be made when employment is irregular, or when because of illness large amounts are owed. The financial investigators should be very careful to verify statements made by patients except those referred to clinic by physicians, accredited charitable organizations or public health bureaus.

During 1924 the Public Health Laboratory performed 2,282 Wasserman tests with 619 positive reports, while during the first ten months of 1925, 4,206 tests were done with 862 positive reactions. This is not indicative of the true percentage of luetic infection for there is often a repeated examination of the same patient before and after treatment, but granting two tests for every applicant we still find that one out

of every forty people in the city of Knoxville has been through a charity clinic, and

this fact leads one to believe that there is an apparent abuse of the free clinic.

INDICATIONS FOR SIMPLE AND RADICAL MASTOID OPERATIONS*

STEWART LAWWill, M.D., Chattanooga

IN presenting my subject I wish to apologize for the apparent stereotyped language in which it is written, but I believe that there is no better way to cover the subject thoroughly than to follow the lines already used by the leading men of our specialty.

The purpose of the simple mastoid operation, of course, is to drain the mastoid cells of pus when infected and, the exenteration should extend to the limitations of the disease. This usually calls for the removal of the mastoid cortex, the complete excavation of all mastoid cells, especially the large cells at the tip, those posterior to the sigmoid flexure, those about the root of the zygoma, the curettement of all granulations, and necrosed areas and the establishment of postaural drainage of mastoid cells and antrum.

Whenever a purulent inflammatory process has invaded the mastoid antrum and mastoid cells, the following evidences are to be found: 1, pain over the mastoid region which is deep-seated, continuous, and radiates over the entire side of the cranium. The facial expression is that of anxiety and suffering; 2, Tenderness on pressure over the mastoid cortex—the localizing points of tenderness are found over the mastoid antrum, the mastoid tip, along the zygoma and about the entrance of the mastoid emissary vein. Tenderness may be entirely absent; 3, Drooping of the posterosuperior canal wall and bulging of the drum membrane which does not diminish as a result of paracentesis. 4, Fever—a condi-

tion of general toxemia may or may not be present. The rise in temperature is not characteristic, but is more marked in infants and young children. 5, Discharge The discharge may be simply excessive with a tendency to increase rather than diminish; it may be of virulent type, or a sudden cessation of discharge may take place with simultaneous increase of mastoid pain. A prolonged profuse aural discharge which resists all approved measures of local treatment, including paracentesis and electrolysis, is considered by many otologists to furnish sufficient indication for the performance of the simple mastoid operation. Phillips believes that with an acute purulent otitic suppuration with fetid odor wherein the invasion is that of one of the more virulent types of pathogenic bacteria, and in patients of weakened vitality where the discharge manifests no tendency to abate after six or eight weeks, a mastoid operation is indicated. 6, Subperiosteal, post-auricular swelling in connection with acute otitis with or without superficial abscess is an indication for mastoidectomy, provided the swelling is not from a feruncle.

In addition to the above-mentioned indications, it may be stated that on account of the manifest danger of serious complications, the mastoid operation is a life-saving measure, and, although it is performed primarily in the interest of the life of the individual, there are secondary considerations which materially enhance its value and I will mention them here: The mastoid operation in acute mastoiditis quickly terminates a purulent necrotic process which otherwise might become chronic;

*Read before the Eye, Ear, Nose and-Throat Section, Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

necrosis of bony areas and the prolonged and constant danger of serious labyrinthitis and intra-cranial complications are prevented by it; loss of hearing and persistent otorrhoea are also prevented.

It will thus be seen that, even though a patient suffering from acute mastoiditis might recover from the acute symptoms without loss of life, such recovery is prone to be followed by the sequelae above mentioned; whereas, an operation skilfully performed, in due season, brings to an end the purulent process, with perfect hearing results.

The time for operative interference is ever dependent upon a satisfactory diagnosis of the presence of destructive purulent inflammation in the mastoid cells. Just when the exact time has arrived may not be measured by days or hours, but the simple mastoid operation should be performed in acute purulent inflammation which involves the mastoid cells, whenever a permanent remission of symptoms has not been affected either by proper drainage through the drum membrane, rest in bed, and the employment of the local measures, such as irrigations, etc.

Much has been written in favor of a so-called early, simple mastoid operation, and if by this is meant operation as soon as it can positively be demonstrated that a purulent inflammatory process has invaded the mastoid cells, which is too virulent and too extensive to offer any hope of spontaneous cure either by drainage or absorption, then the early operation is to be recommended—although Alexander, of Vienna, states that it is safe to wait as much as three weeks from the inception of the otitis, not from the beginning of the mastoid supuration, before operating, claiming that an acute mastoid that is opened this early will take longer to heal than the one that is left until a week or two later. He may be right about it taking longer for a mastoid that is operated very early to heal than one that has already had some protective limitations formed by nature by waiting, but I much prefer to operate any very well defined case early, especially in children be-

cause of the danger of intra-cranial infection.

The value of the x-ray is indisputable in acute mastoids. This is the only place where it can be depended upon to give accurate information as to progress of the disease.

The purpose of the radical mastoid operation briefly stated is to convert the external auditory canal, tympanic cavity, aditus ad antrum, mastoid antrum and mastoid cells, when diseased, into one wide-open cavity; to excavate all granulations and diseased bone, to destroy all membranous and muscular tissue lying within these limits, including the tympanic membrane and to effect dermatization throughout the entire area, in the hope that by so doing the ramification of the disease will be terminated once and for all.

While the general statement that the radical mastoid operation is performed in order to effect a cure of chronic purulent otitis media is correct, it must be understood that it is not indicated when the disease is confined to the tympanic cavity proper, but it is to be performed only when the typical indications which we are about to define are present.

The operation is a capital one requiring extensive dissection in the most complicated bone in the human body.

The radical mastoid operation is indicated: 1. When a permanent cessation of the purulent process has not been effected by prolonged local intra-tympanic treatment, combined, if necessary, with minor operations as removal of granulations, polypi, enlarging perforations, electrolysis, etc. 2. When a cure has not been effected by the removal of necrosed ossicles and the currettement of the middle ear. 3. When acute symptoms of mastoiditis supervene in chronic suppurative otitis media. 4. When a vertigo, pain or other unusual symptoms are traceable to a suppurating ear. 5. The appearance of facial paralysis during the course of chronic otitis media. 6. Attacks of vertigo, nausea and vomiting, indicating that the necrotic process involves the labyrinth. 7. In all

cases of complicating intra-cranial or lateral sinus involvement, the latter being characterized by symptoms of general sepsis, increase of leucocytes and of polynuclear percentage. 8. When there are positive symptoms of cholesteatoma in the mastoid antrum. 9. When there are fistuloid openings in the cortex of the mastoid process or in the osseous canal wall into the external auditory canal. 10. Whenever extreme depression or other symptoms of disturbed mentality accompany the suppurative disease.

There are some dangerous indications which call for immediate operation, whatever the concomitant symptoms may be, and among these are: (a) An acute mastoiditis occurring in an ear which is the seat of chronic purulent otorrhoea. (b) Upon the advent of symptoms of labyrinthitis the chief of which are destroyed—hearing, nausea, vertigo and nystagmus. So often this condition will be passed over by the man in general practice, being diagnosed as acute indigestion and on to brain complication and death without his ever knowing what the trouble was. (c) The appearance of facial paralysis in chronic suppurating ear. (d) The appearance of symptoms of intra-cranial involvement.

Contra-indications: The operation is contra-indicated: 1. When the purulent process is tuberculous and accompanied by advanced general tuberculosis. 2. In advanced pernicious anemia or albuminuria, and in cachectic diabetes. 3. It is usually contra-indicated in young children. 4. In all cases where the disease is confined to the ossicles and tympanic cavity. 5. In adults who have scanty otorrhoea without odor, with improper opening of the drum membrane, behind which are retained masses of secretion. 6. In all cases where it is possible to effect a cure by any of the other simpler methods. Further indication is involvement of labyrinthine capsule.

The labyrinthine capsule is composed of dense, hard ivory bone, part of which—the outer (lateral) wall—forms the mesial wall of the tympanic cavity. The labyrinth is

the wonderful organ of equilibrium and also of sound perception. The hardness of the capsule and its anatomical structures seem to be so arranged by nature that they form an unusually strong barrier against invasion by purulent processes. It is estimated by Bezold that the labyrinth becomes involved in the necrotic process only once in 500 cases of chronic purulent otitis. Freerich and Hinsberg, on the other hand, estimate its occurrence in 100 cases. Many cases occur during the first ten years of life and pass unrecognized.

The most vulnerable points in the labyrinthine wall are the horizontal semicircular canal, the round window and the oval window, the promontory, and from the cranial side the internal auditory meatus (in meningitis).

The labyrinth may be invaded by a purulent process from three sources: (a) from the tympanic cavity; (b) from the blood currents within the labyrinths; (c) from the meninges.

When the middle ear spaces are the seat of a purulent lesion, it is possible that the labyrinth may become involved through what Boenninghaus calls a "collateral hyperemia." The majority of all cases, however, do not originate in this manner, the most common origin being that found in cases where a chronic middle ear suppurative process advances and during its progress attacks the labyrinthine wall and finally invades the delicate structures within the labyrinthine capsule. This type of labyrinthitis is observed with greater frequency among those cases of chronic purulent otitis media in which cholesteatoma is the dominant factor in the middle ear lesion. Tuberculous and post-scarlatinal chronic purulent otitis media also produce many cases of this type of purulent labyrinthitis but are usually called 'symptomless' loss of function because the labyrinth is invaded without the violent symptoms that accompany the other purulent labyrinthine affections.

Finally, when the chronic otorrhoea is the clinical manifestation of chronic suppurative of the mucous membrane only, the

labyrinth is rarely invaded.

It is not to be expected that the functioning labyrinth once destroyed can ever be restored. However, the cessation of the purulent process not only is possible, but often does occur even without surgical intervention. Hinsberg holds that post-scarlatinal labyrinthine suppuration tends to heal, an observation substantiated by Boenninghaus in the study of deaf mutes in the Breslau Deaf Mute Asylum. I have one case of nerve deafness following scarlet fever suppuration which must have had a labyrinthine suppuration, since the nerves are totally deaf.

When cholesteatoma is the predominating factor, spontaneous healing, that is cure without resort to surgery, is less probable.

The radical should be extended to include the labyrinth whenever the experimental methods devised for investigating the irrigability of the labyrinth prove beyond a doubt that the vestibular function is lost and is just recently lost.

Hearing tests on affected side are gone;

Turning tests show destruction of affected labyrinth or the nystagmus present is compensated or neutralized by turning, or,

Where nystagmus present is not affected by fistula test.

According to Hinsberg, the mortality of purulent labyrinthitis is from fifteen to twenty per cent. The great majority of those who die succumb to meningitis. The prognosis in cases of circumscribed labyrinthitis is more favorable.

In conclusion, I want to say that it is my policy to operate acute mastoids when they present the classical picture of purulent infection, well substantiated by x-ray, and after one to three days waiting to see that spontaneous resolution does not begin. The x-ray, here, is almost infallible. I have never seen a well defined case fail to show on the x-ray plate. (This is not true of the chronic mastoid.)

In the radical, more precision is however necessary. As outlined by Alexander, whenever (1st) acute symptoms follow a

chronic otorrhoea, (2nd), whenever chronic otitis does not respond to proper local treatment, (3rd), in cholesteotoma and (4th), in evidences of extension of necrosis to involve cochlea, vestibule, seventh nerve, etc., the radical operation is indicated.

DISCUSSION.

DR. C. D. BLASSINGNAME, Memphis: In the presence of an established diagnosis of acute mastoiditis the points that would influence us toward an operation Dr. Lawwill has mentioned. To the list he has given I would add:

1. Edema and redness of the mastoid region.
2. Presence of a subperiosteal abscess.
3. Reappearance of pain and tenderness over the mastoid several days after it has subsided.
4. Leukocytosis with increase of polys. above the normal, in the presence of an acute mastoiditis, which has been efficiently treated.
5. Virulent infection, such as streptococci in pure culture or mixed with pneumococci.
6. Acute mastoiditis occurring in an ear which is the seat of a chronic otorrhea.
7. Sudden cessation of discharge with continuance or accession of pain.
8. Swelling of the posterior cervical lymph nodes.
9. General indisposition.
10. Roentgenographic evidence.

Although the indications for an operation are usually clearly manifest, yet the time at which the operation should be done gives the otologist no little concern. Some cases of non-virulent infection, if operated upon early, before they have time to develop some immunity to the infecting organism, have a very severe local and systemic reaction and a very stormy convalescence. If the operation were delayed the infection would become localized, the general immunity of the body raised and the post-operative reaction would be very slight. On the other hand, it has for a long time been observed that there are certain types of mastoiditis which are very virulent from the onset and rapidly produce death by septicemia, brain abscess, meningitis and other complications, if the progress of the disease is not checked by early operative measures.

The pathology underlying these two types of cases was not clearly defined until recently. To the group of cases running a more or less mild course, becoming localized, forming a cavity filled with pus and detritus, is given the name coalescent mastoiditis. The infecting organism in this type is usually staphylococcus or pneumococcus. It is usually more satisfactory to defer operation on these cases until the process is well localized and nature has had time to throw a wall of defense around the diseased area. The element of

danger in these cases is by virtue of the fact that the larger vessels within and adjacent to the diseased area become thrombotic and subsequently the thrombi disintegrate and particles are cast off into the blood stream and may produce metastatic abscesses or general septicemia. These cases should be operated upon before the thrombi begin to disintegrate. As Dr. Lawwill says the exact time at which this should be done cannot be measured in days or hours. One must depend upon his own judgment, based upon a knowledge of the probable pathology, as to the time he should operate. Personally I think that after a period of from ten days to two weeks from the onset, if the mastoiditis has not resolved and there is evidence that there is pus and broken-down tissue in the mastoid cells, it should be operated upon, or in other words, as soon as it is evident that resolution will not take place and a spontaneous cure result. The condition in the mastoid can be verified from time to time by roentgenography.

The other type of pathology is found in those cases that run a very virulent course and show a general septic condition from the onset of the disease. This type is designated hemorrhagic mastoiditis. The infection is always due to a hemolytic organism, most often the streptococcus hemolyticus. The cell walls are not broken down and an x-ray picture varies very little from the normal—there is usually only a slight cloudiness. The mucus membrane of the cells is greatly swollen. The blood vessels of the membrane are distended with blood and the venules are found to contain small thrombi. The cells themselves are filled with a bloody serum.

It is necessary to operate upon these cases only in order to prevent general septicemia and death. The time of operation depends upon the apparent virulency of the infection. I have operated on some of them as early as the third day and felt afterwards that it was none too soon.

The points that indicate a hemorrhagic type of mastoiditis and one that would require an early operation are: First, high range of temperature with a septic course; that is, abrupt rises and falls; second, chills or chilly sensations; third, intense prostration; fourth, when examination shows that the drum is engorged, though not bulging, there may be hemorrhagic vesicles in the upper part of the canal and on the adjacent part of the drum; when the drum is opened bloody serum discharges; fifth, a fall in the hemoglobin index from day to day with a marked leukocytosis and the polys having a definite relationship to the total white count; sixth, a positive blood culture occurring early in frank mastoiditis.

The roentgenograms are of no value, as there is no breaking down of the intercellular walls.

I wish to respectfully take issue with Dr. Lawwill upon some points in the indications for radical mastoid operations. In fact, if I had a patient with fair hearing, say about one-fourth the normal in an ear, I would not do a radical, primarily, except in those cases with complications which might become dangerous to life, such as paralysis of the facial nerve, intracranial and labyrinthine lesions. I base my position with reference to the modified radical mastoid operation upon considerable experience with the operation. I have operated several cases of chronic mastoiditis of from five to twenty years' standing and cured them as far as evident symptoms and apparent pathology are concerned. And why should this operation cure a great number of cases where the radical mastoid might be thought of? By it you are able to remove as much pathology behind the middle ear as with the radical operation. You provide an approach to the middle ear through the additus by means of which the middle ear may be irrigated and treated. You do not touch the middle ear structures and so the hearing is not injured.

I would classify the indications for the radical operation as follows: First, when there is deafness in the presence of chronic mastoiditis; second when there are intracranial complications extending from a chronic mastoiditis; third, when there is bony necrosis in the middle ear; fourth, when the simple or modified operations have failed to arrest a chronic purulent otorrhea.

DR. R. PATTERSON, Knoxville: One of the omissions I think most of us are guilty of is not making it a routine to examine for cholesteatomatous crystals. We do not need a laboratory man. These crystals are easily seen under the microscope. When you have cholesteatomatous crystals they are an indication for a radical mastoid operation.

DR. STEWART LAWWill, Chattanooga (closing the discussion): One point brought out by Dr. Blassingame, I do not know this hemolytic mastoiditis that he speaks of. I have never classified it. Perhaps there are some cases that might be dangerous to wait on. Alexander recommends waiting, and I think it is perfectly safe to wait unless your patient is pretty toxic and in that case I would go in and do the operation regardless of what the x-ray shows. However, the x-ray has been satisfactory in my hands in all cases of acute mastoid. Waiting for deafness as an indication of chronic mastoiditis is, I think, a pretty hard thing to wait for, because by that time we are going to have to do more than a radical operation. I have never waited as long as some men have with acute mastoids. It may be safe, but I would not feel safe in waiting until the patient had symptoms of toxicity.

UNDESCENDED TESTES*

JAMES W. MCCLAREN, M.D., F.A.C.S., Jackson, Tenn.

THIS condition is not so rare as one would think and is of importance both to internist—as he must give advice as to when to consult a surgeon—and to the surgeon who must decide what procedure is best in each particular case. This subject is also of special interest in this day of intensive educational campaigns to prevent malignancy, because it has long been the teaching that cryptorchids are prone to malignancy in the retained organ.

EMBRYOLOGY.

During foetal life the testes lie at the back part of the abdomen, behind the peritoneum, just below and in front of the kidneys. Attached to the lower end of the epididymis, and attaining its full development from the fifth to the sixth foetal month, is the gubernaculum testes, which contains muscular tissue, which below divides into three portions, passing to Poupart's ligament, to the os pubis and to the rectus muscle, and to the dartos at the bottom of the scrotum. The gubernaculum is supposed to contract and so cause descent of the testicle, but this is a moot point. Between the fifth and sixth months each testes reaches iliac fossa, by the seventh it reaches the internal abdominal ring, by the eighth month it has reached the scrotum, invaginating from behind the preformed peritoneal sac, proce sus vaginalis, the upper part of which usually becomes obliterated just before birth, the lower portion then forming the tunica vaginalis testes completely cut off from the abdominal cavity. The other structures in front of the testes are likewise carried onward, forming the covering, as already described.

In ten or twenty per cent of all children the testicles are still in the abdomen at the time of birth. In most of these the testicles descend during the following weeks, but in a small proportion of cases one or both may

be retained for years, or even permanently. The clinician need take no account of the position of the testicle during the first year, but if it is retained longer than this the condition is definitely abnormal.

The condition of retained testicle is, if single, usually an anatomical thing due to obstruction to its progress or by traction from behind by peritoneal adhesions or shortness of the vas, while absence of both especially if atrophied is usually due to some failure of the endocrine glands.

The testicle may be:

1. Retained in the abdominal cavity, lying in the lumbar region, or resting near the internal abdominal ring.
2. Retained in the inguinal canal, anywhere from the internal to the external ring, or,
3. It may be lying just under the pubic bone.

The conditions that usually cause a patient with retained testicles to seek advice are:

1. Hernia which if not already present is apt to develop;
2. Painful injuries and traumatic inflammation;
3. Rotation of the testicle with torsion of the cord causing strangulation of the cord;
4. Atrophy of the testicle from pressure and defective circulation;
5. Nervous irritability;
6. Mental depression.

These conditions can rarely be expected to be cured without operation. What shall be done with them? Shall they be replaced if possible in their natural bed in the scrotum or shall they be removed? This is dependent on several conditions: Age of patient, the health of the patient, the presence or absence of a normal testicle, and on the other hand whether the disease is single or double, whether the testicle is large enough to be reasonably expected to func-

*Read before the Tennessee State Medical Association, Nashville, April 21, 22, 23, 1925.

tion, or whether we can probably cure the hernia without its removal, and whether if we leave it, we can bring it down into the scrotum far enough so that will stay there comfortably.

There has long been the belief that the development of malignancy is relatively greater in the undescended testicle than in the normally placed one. This must be considered in taking up the question as to what to do with your particular case. Coley found the ratio of malignancy in undescended to descended testes is as 1:5, and the ratio of nondescent to the normal as 1:50 and from this we can see the great frequency of malignancy in the misplaced organ. Cunningham has found reports in the literature of sixty-five cases of malignancy in cryptorchids which he discussed in a paper in 1921. Lund of Boston has had four cases since 1919, two of which were in patients in which he had replaced very successfully the displaced testicle some years before. He says he has always been skeptical as to malignancy being more frequent in the undescended testicle but that he has changed completely and is now a strong advocate for removal of these organs instead of their replacement.

It would be undeniably foolish to replace a small inactive and useless testicle in the scrotum when the other is functioning and normal when the replaced one may become a menace to your patient's life. Coley says that the trauma incident to replacement makes malignancy much more liable. The sterility of cryptorchids has always been hotly debated but the concensus of opinion among the majority is that they are sterile and that replacement does not change this but there are a few that contest this, notably Eccles.

If the testicle is within the inguinal canal or just above it the operation should be done as early as the second or third year of age. There is no advantage in waiting as some have recommended until the child is eight or fourteen years of age, because the organ is degenerating during that time. Operation is not called for, except for hernia, if the testicle is in the scrotum part of

the time but ascends into the abdomen when the surgeon examines it. H. G. Armstrong in *Guys Hospital Gazette*, London, 1918, reports seven boys with complete absence of both testicles from the scrotum. In each case the penis is very small, the scrotum a small piece of wrinkled skin, and there was no appearance of hair on the pubic. Four of them had Rothschilds sign of thyroid inadequacy, i.e., rarification of the outer third of the eyebrows. To each of them thyroid extract in half grain doses was administered twice a day over a considerable period of time with satisfactory results. The effect of the treatment was almost immediately apparent and in six of these cases was completely successful. In the seventh the left testicle descended into the scrotum, but the right found a lodging in the perineum. Armstrong was able to continue his observation of some of these boys to the termination of adolescence and found that the testes and penis continued to make a normal growth, but in some the pubic hair was still very scanty. He has not had this success in the treatment of a single undescended testicle, because in this condition the fault is anatomical, whereas the absence of both testes depend on some functional failure of the endocrine glands.

Many operations have been devised to replace the organs. None are easy. Some are impossible to replace. The operation devised by Bevan is the most practical. An incision is made through the anterior wall of the inguinal canal exposing the pouch of the peritoneum which extends towards the scrotum. The peritoneum should be divided, exposing the testicle with its tunica vaginalis. The vaginal process of peritoneum, which in children is of diaphanous thinness, should be divided transversely above the testicle. The upper opening which leads into the peritoneal cavity should be closed with a ligature. The peritoneal sac adjacent to the testicle should be stitched about with a fine continuous suture, making a tunica vaginalis such as embraces the normal testicle. The peritoneum is then stripped back from the cord while the cord and testicle are drawn downward.

The facility with which the testicle can be drawn down depends on the age of the patient. Firm bands or threads of tissue which offer resistance should be divided. Only the vas and its vessels need be spared. It will usually be found that the structures which offer resistance are the spermatic artery and veins. These should be cut between two ligatures. The vessels of the vas are adequate for the nourishment of the testicle. A pocket in the scrotum should then be made by blunt dissection and the testicle placed in this pocket. A stitch can be placed in the covering of the testicle and the bottom of the scrotum to anchor the testicle. The wound should be closed as for inguinal hernia, leaving the cord in its natural position.

The earlier the operation is done the easier it is to bring down the testicle; but the younger the patient the more difficult it is to manipulate the structures because of their smaller size. The operation may be done at any time. It is most easily done between the sixth and twelfth years. The longer it is deferred the greater is the danger of atrophy of the testicle.

I have done four of these operations recently and in all but one have been able to replace the organ and have obtained good anatomical results. In the other I found it impossible to replace on account of shortness of the cord. In this case I even opened up the bottom of the inguinal canal and swung the cord down by the pubic bone but it was too short so I removed the testicle. In the other three I was very proud of results obtained until I commenced to search the literature and I am now doubtful as to whether I used the right procedure. I believe the one I failed to replace and removed was really the only one correctly treated. Since reviewing the literature I have come to the conclusion that in the cases you get after puberty which have one testicle apparently normal, the abnormally placed one should be extirpated. My reasons for this conclusion are threefold, one can repair the accompanying hernia better, the

displaced one is nearly always useless, but principally because of the danger of malignancy.

DISCUSSION.

DR. LYLE B. WEST, Chattanooga: Dr. McClaran has had a great many of these cases. Thrift is being taught throughout the country, the saving of tissue and the saving of organs. As I take it, the undescended testicle, if up in the inguinal canal, is more likely to be traumatized, and if it can be put down in the scrotum, where the trauma is less, it is the better plan. A testicle is a testicle, and if something happens to the one and the other has been removed, there is none left. It can usually be brought down into the scrotum and I think this should be done. It should be sunk down in the scrotum and used as a "sinking fund" for a rainy day.

DR. TOM R. BARRY, Knoxville: I saw a case about three years ago of a malignancy of an undescended testicle. The mass filled the entire pelvis and could be felt extending up almost to umbilicus. By rectal examination it apparently was attached or involved the left seminal vesicle. Under deep x-ray therapy the mass entirely disappeared and is now not palpable either suprapubically or per rectum. The patient is apparently well after three years.

DR. JOSEPH H. SMITH, Memphis: The question of the undescended testicle has been a problem for some time and I frequently am asked what I do with them. I was glad to hear the essayist say that the only one he treated correctly was the one he took out. It is my belief about undescended testicle. The idea is that the undescended testicle is a non-functioning organ and of no use to the man. If the testicle is early brought down, while the individual is young, and put in the scrotum, if the vas is long enough, it is possible that it may become a functioning organ later on, but if the patient is more than twelve years of age it is a question whether or not it will ever be of any service. My experience is that if we attempt to take down an undescended testicle we have to take them out a few days later because of swelling, pressure and edema.

DR. JAMES W. McCLARAN, Jackson (closing): We advocate the removal only where there is one that is undescended. Where the condition is doubtful an attempt is made to bring them down. The condition is not nearly so rare as is thought. If you are examining a hernia make a careful examination of the scrotum on that side and you will be surprised to see how many of these cases will be found.

THE JOURNAL

OF THE

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Devoted to the Interests of the Medical Profession of Tennessee

Office of Publication, 420 Jackson Bldg., Nashville, Tenn.

J. F. GALLAGHER, M.D. ----- Editor
R. C. DERIVAUX, M.D. ----- Associate Editor

FEBRUARY, 1926

DEATHS

Dr. G. W. Callis, of Dyer, aged 75, died February 23. Dr. Callis graduated from the Memphis Medical College in the class of 1881 and was a charter member of the Giles County Medical Society.

Dr. W. J. Barker, of Trenton, aged 50, died recently following an attack of pneumonia. Dr. Barker was a graduate of the University of Tennessee of the class of 1901.

THOMAS EDWARD ABERNATHY, M.D.

Dr. Abernathy was born near Pulaski, Tenn., where he received his early education. He received his M.D. degree from the University of Louisville in 1893 and began the practice of medicine in Chattanooga in May, 1893, continuing until his death, February, 1926.

In 1904 he did post-graduate work at the New York Polyclinic.

During his career he held many positions of honor and responsibility, serving well his community, his state and his country.

He was county physician of Hamilton County and chairman of the Hamilton County Board of Health from 1896 to 1904. He was a member of the Tennessee Board of Health from 1904 to 1912, serving as president a part of the time.

During the World War he gave his services gratis as a member of the Medical Advisory Board, serving also as president of the U. S. Board of Pensions.

Dr. Abernathy was a member of the

American Medical Association, the Southern Medical Association, the Tennessee State Medical Society, the Chattanooga and Hamilton County Medical Society and the Association of Southern Railway Surgeons.

He was president of the Chattanooga and Hamilton County Medical Society in 1908, and at the time of his death a member of the Board of Governors.

He was a member of the Methodist Episcopal Church, South, a Mason, Knight Templar and Shriner.

Dr. Abernathy was a Christian gentleman, beloved by all those who knew him. He was industrious and skilled in his chosen profession, honorable and upright in all things.

Whereas, It has pleased God, the Father of us all, to take from us our beloved colleague, Thomas Edward Abernathy; be it

Resolved, That we deeply regret his passing; we have sustained a great loss. We lose the kindly influence of his presence, which was always exerted for the good of the profession and the advancement of medicine. We, his patients and the community lose a sympathetic friend and a skillful physician; be it further

Resolved, at this memorial meeting, That the Chattanooga and Hamilton County Medical Society extend our heartfelt sympathy and condolence to his family in this time of their sad affliction and point them to an all-wise God for comfort; be it further

Resolved, That a copy of these resolutions be spread upon the minutes of the society, a copy be sent the family of the deceased, and a copy be sent the Tennessee State Medical Journal for publication.

FRANK TRESTER SMITH, M.D.

WILBURN J. WINTER, M.D.

C. HOLTZCLAW, M.D.

J. W. MACQUILLAN, M. D.

JOSEPH LEE CLARK, M.D.

With profound regret we announce the passing to the "Great Beyond" of one of our loved and honored members.

Dr. Joseph Lee Clark was born on a

farm on Boone's Creek, Washington County, Tenn., on December 14, 1855, and died after a short illness on January 10, 1926.

He was educated in Boone's Creek Seminary, always a leading educational institution in this locality.

At the age of 20 he began the study of medicine in Louisville, Ky., finishing four years later.

He began the practice of medicine at his old home and continued at the same location until his death, a period of forty-six years. He was a fine type of courteous Christian gentleman and never in his relation with his professional brethren did he step down from a high plane of generous and unselfish professional courtesy. The life of Dr. Clark was beautiful in its simplicity and devotion to duty. His gentleness and faithful, tender care of his patients bound them to him with great admiration and loyalty. Modest and unassuming in his bearing, he went about his daily tasks, scattering sunshine and hope in the homes of the sick and sorrowing.

He took an active interest in public affairs. He was elected a magistrate from his civil district and held that position for thirty-six years, always standing for educational progress and justice.

He was an active and loyal member of the church of his choice. He was married to Susan M. Crouch in 1879. His widow and eight children survive him. He was a kind, devoted husband and father, and his life remains a precious memory to his loved ones. His life was both an inspiration and benediction to us all, and it is with sincere sorrow that we, the members of the Johnson City and Washington County Medical Society, bear testimony to the nobility and worth of his character and the loss we feel in the death of so valued a member.

Therefore, be it resolved, by the Johnson City and Washington County Medical Society, in meeting assembled, that we deeply deplore the death of our brother and that a copy of this action be sent to the bereaved family and a copy be furnished to the local newspapers and the

Journal of the Tennessee State Medical Association.

Respectfully submitted by

W. J. MATTHEWS,
R. W. DULANEY,
H. D. MILLER,
Committee.

NEWS NOTES AND COMMENT

Remember the change in date of meeting. Memphis, May 11, 12 and 13.

Dr. M. C. Wilson, formerly of Nashville, announces his removal to Miami, Florida.

Dr. Daniel N. Williams, of Chattanooga, was married recently to Miss Frances Blair, of that city.

Dr. A. H. Lancaster has opened offices in Knoxville and is limiting his practice to the treatment of skin and syphilis.

The records of the Secretary's office show that the counties are behind last year in reporting the membership. Members, please pay your dues; and secretaries, please report promptly.

The spring meeting of the East Tennessee Medical Association will be held in Morristown, May 20, 21. Those wishing to present papers should address Dr. G. Victor Williams, secretary, Chattanooga, Tenn.

The semi-annual meeting of the Middle Tennessee Medical Association will be held in Springfield, May 20, 21. Titles of papers to be presented at this meeting should be sent to Dr. Sam P. Bailey, secretary, Nashville, Tenn.

Announcement has been made in Clarksville of the death of Dr. J. R. Harris, former director of the Montgomery County Health Unit. After leaving Clarksville, Dr. Harris was connected for a short time

with the Willis C. Campbell Clinic, Memphis.

Dr. R. G. Tappan has opened office in Knoxville and is associated with Dr. C. B. Jones. Practice limited to ear, eye, nose and throat.

MEDICAL SOCIETIES

The Giles County Medical Society reorganized with Dr. J. K. Blackburn, president; Dr. James A. LaRue, secretary, and Dr. George D. Butler, treasurer, all of Pulaski.

The Dyer County Medical Society elected at a recent meeting Dr. J. D. Brewer, Dyersburg, president; Dr. J. W. Wynne, Newbern, vice-president, and Dr. Lyle Motley, Dyersburg, secretary-treasurer.

Morgan County, after lying dormant five years, has reorganized and reported Dr. Arthur Byrd Warburg, president; Dr.

W. E. Gallion, Oakdale, secretary-treasurer and delegate to the next annual meeting of the State Society.

The following officers were elected for the ensuing year for the Washington County Medical Society: Dr. E. B. Bowery, president; Dr. R. St. Elmo Murray, vice-president; Dr. C. W. Friberg, secretary-treasurer. All reside in Johnson City.

The physicians of Humphreys, Hickman and Dickson counties have organized a Tri-County Medical Society and their meetings are being well attended. Dickson County has reported twenty members from these counties as members of her society.

After nine or ten years of inactivity the Warren County Medical Society has reorganized and is functioning again. The secretary, Dr. John S. Harris, of McMinnville, has reported ten active members to date and reports that Dr. E. L. Mooneyham, of Rock Island, was elected president.

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DISEASE OF THE ACCESSORY SINUSES*

M. M. CULLOM, A.B., M.D., F.A.C.S., Nashville

DISEASE of the accessory sinuses merits our most careful consideration for many reasons. First, because it is at the foundation of many cases of offensive nasal and post-nasal catarrh. Second, because sinus disease is the unrecognized cause of many cases of ill-health. Third, because it is the focus of many serious constitutional diseases, such as rheumatism, heart disease, nephritis, pneumonia, bronchitis, asthma, ulcer of the stomach and other disturbances in the gastrointestinal tract. Fourth, because it may result in abscess of the brain, mastoid abscess, thrombosis of the venous sinuses, meningitis, pyaemia and septicaemia. Because it is far commoner than is generally supposed and is often overlooked as a cause of disease.—*Sir St. Clair Thompson.*

For these reasons diseases of the nasal sinuses are of the greatest interest to the general practitioner and will give him the key to many an obscure case.

For convenience, we divide the nasal accessory sinuses into two groups, the anterior and the posterior sinuses. This classification is based on the direction taken by the drainage from these sinuses. The anterior sinuses drain into the middle meatus

of the nose and so the discharge appears in the anterior portion of the nose. Some of it is expelled or blown out of the nose but a greater part of it passes into the throat. The posterior sinuses drain into the superior meatus and passes backward into the naso-pharynx and throat. The anterior sinuses are the maxillary, the anterior ethmoidal and the frontal. The posterior sinuses are the posterior ethmoidal and the sphenoid.

Etiology. The causes of sinus disease are many. The nature of the opening of an accessory sinus is an important factor in its pre-disposition to disease. If the opening is in the floor of the sinus, the chances of it becoming infected are very much less than if the opening is high up. For instance, the ostium of the frontal is directly in the floor of the sinus, while on the other hand the opening of the antrum of Highmore and of the sphenoid sinus are located high up so that direct drainage is impossible and the secretions have to be conveyed out by means of the ciliated epithelium. The size of the opening is also important. If the openings are generous, the chances for infection are much less than if they are small and tortuous. In any event it is the inadequacy of the drainage system that makes sinus disease so

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common and so different from infection in other parts of the nasal mucous membrane.

Nasal obstruction is one of the great causes of sinus disease. The obstruction tends to still further embarrass the already inadequate drainage system of the sinuses and favors retention and infection. Hypertrophy of the turbinate bones and deflection of the septum are two types of obstruction which favors sinus disease. The frequency with which sinus suppuration is found in the narrow nostril of a deflection of the septum is proof positive of this fact.

One of the frequent causes of sinus infection is acute colds or coryza. It acts in two ways: by direct extension of the infection from the nasal mucous membrane, and as a result of the swelling of the mucous membrane, thereby blocking the opening to the sinuses and interfering with drainage. Operations in the nose, packing the nose following operations, or for the purpose of checking hemorrhage, may result in infection of the sinuses by blocking the drainage.

One of the most fruitful causes of sinus disease is bathing in swimming pools. The use of the pool by so many different people, each contributing his share of germs, keeps the water of the pool infected, so that diving into this infected water causes the fluid to be forced into the sinuses.

One of the causes of infection in the antrum of Highmore is that arising from the teeth, on account of the fact that the roots of the bicuspid and the anterior molars are in close touch with the floor of the antrum, the eruption of a root abscess into the antrum or a carious root may set up suppuration in the antrum. Various investigators claim that from ten to thirty-three per cent of the abscesses of the antrum are due to the teeth.

Syphilis or malignant growths may cause empyema of the sinuses; most chronic suppurations begin as acute attacks. But by far the greatest cause of suppuration in the sinuses is the secondary infection,

arising in the course of many infectious diseases, such as influenza, pneumonia, scarlet fever, typhoid fever, measles, smallpox, cerebro-spinal meningitis, diphtheria, mumps and gonorrhoea. Greater in number than all the rest put together are the cases that follow influenza. To such an extent is this true that in taking the history of a patient, if it is found that he has been a victim of influenza, a most rigid examination should be made of his sinuses.

Suppuration in the sinuses may pass unperceived. In a severe attack the symptoms while marked may be entirely overlooked and the diagnosis missed entirely. The symptoms may be passed over as a severe cold. There is pain in the region of the cavity which is described as neuralgia. There is tenderness on pressure over the affected sinus. A rigor or rise of temperature suggests more than an ordinary coryza. Relief is experienced by a discharge of mucous or muco-pus or by a free gush of pus, sometimes with a very offensive odor.

Symptoms of Chronic Suppuration. Chronic suppuration in the sinuses is much more common than is supposed. It constitutes only two per cent of the cases applying for nasal treatment, yet it is found in from thirty to fifty per cent of all post-mortems. This sustains a point that I wish to impress strongly upon the general practitioner, namely, that in the great majority of cases of sinus disease, there are no symptoms to attract the attention of the patient to his sinuses and likewise nothing to attract the attention of his physician to them. Therefore, in all cases of unexplained disease it behooves the physician to make a careful examination of the sinuses. As explained before, on account of its faulty drainage system the maxillary sinus or antrum of Highmore is the one most frequently involved. The symptom which causes the patient to seek relief most frequently is the discharge. They may come complaining of stuffiness in the head or for a chronic cold. The presence of pus in the nose renders the

possibility of sinus disease strong.

For the sake of simplicity we may divide the symptoms of sinus disease into three classes. First, symptoms in the head. Second, symptoms in the lower respiratory tract and the digestive tube. Third, general symptoms. Under symptoms of the head the two most complained of are discharge and obstruction. The discharge and obstruction are usually one-sided. The discharge and obstruction are usually more in the morning and varies with the weather, the general health and the cavities affected. The discharge varies in amount from almost nothing to where the patient may require fifteen or twenty handkerchiefs a day. Hypertrophic rhinitis, atrophic rhinitis and nasal polypi are all traceable to sinus suppuration.

Disorders of smell and taste are frequently indicative of sinus disease. Parosmia or perverted smell is sometimes met with. Anosmia or loss of smell may be due to swelling of the mucous membrane which prevents the odors from reaching the nerve filaments. Cacosmia or consciousness of a bad odor, constitutes the strongest indication of sinus disease. It constitutes a differential symptom between sinus disease and atrophic rhinitis. In sinus disease the patient is conscious of a bad odor, but other people are not. In atrophic rhinitis other people are conscious of a bad odor but the patient is not. Headache, faceache and neuralgia are such constant symptoms of sinus disease that the sinus should always be investigated in patients presenting these symptoms. The neuralgia of a frontal sinus abscess is very characteristic. It usually comes on early in the morning and increases in severity until about twelve o'clock and then gradually disappears. This form of neuralgia used to be called sun pains. It is caused by obstruction to drainage, possibly from the standing position.

Post-nasal catarrh is often symptomatic of sinus disease. It may also cause inflammation, suppuration and abscess in the adenoid tissue, the tonsils and cellular tis-

sues of the neck. Symptoms in the lower respiratory tract are unexplained cough, acute and chronic laryngitis, chronic bronchitis, asthma. Recurrent attacks of broncho-pneumonia and lobar pneumonia have been found due to absorption of pus from the nasal sinuses. In practically all cases of patients dead of pneumonia and pneumococcic meningitis, where an autopsy has been performed, pus has been found in one or all the nasal sinuses.

In the digestive tract gastric disturbance, obstinate vomiting and diarrhoea may be traced to the descent of pus into the stomach.

Among the general condition which have been traced to sinus empyema are those of general ill-health, loss of weight, fever simulating typhoid, malaria, tuberculosis and pyaemia. A whole new field has been opened by the theory of focal infection. All the myriad manifestations of rheumatism are directly traceable to sinus suppuration.

By far the most important cases are those presenting no local symptoms. These are cases of latent empyema of the sinuses. A rigid examination of the nose discloses no pus present. There is no apparent abnormality in the nasal structure. We have only the symptoms of focal infection to guide us. These are the cases that call for the most rigid and painstaking examination.

The patients who come complaining of a discharge from the nose with a bad odor, of which they are conscious, present little difficulty in diagnosis. The presence of pus in the nose leads us at once to use transillumination, and the x-ray which usually discloses the offending sinuses promptly. It is the patient who is conscious of no discharge and who has no nasal symptoms that we are liable to pass up. A typical history of such a patient reads: patient had "flu" during the epidemic; after recovering did not regain strength, has lost weight and vitality, color is bad. Has no pep, tired all the time. General physical examination discloses

nothing abnormal. In a case of this kind we are not surprised to find one or both antra dark on transillumination. These are the cases in which a carefully taken history is of great value.

The treatment of acute sinus disease is mainly medical. The treatment of chronic sinus disease is mainly surgical. In acute sinus disease, we try to avoid operation if possible. Just as in acute appendicitis, we try to tide the patient over the acute stage as we do in acute infection of the sinuses. As the French say, we prefer to operate in the cold.

If it is dangerous to invade an abdomen in the acute stage of an appendicitis, how much more so to make wounds in the sinuses where the connection with the cranial cavity is so close through the cribriform plate, and where the blood is carried off through the ethmoidal veins directly into the longitudinal sinus. Operative procedure has been followed by a fatal issue all too often in cases of this kind. Sometimes operation cannot be avoided, but it should be a last resort. We seek to promote drainage by rest in the bed, sprays of a weak adrenalin solution to shrink up the swollen tissue, hot fomentations over the region of the sinus, packing with pledges soaked in twenty per cent argyrol solution and sedatives to control the pain. I have served a long apprenticeship in trying to cure chronic empyema of the sinuses by medical treatment. I have gone through the whole gamut of sprays, topical applications, suction and the various methods recommended for dealing with chronic empyema of the sinuses in a non-surgical way. It is now my mature judgment and deliberate conviction that the only way to deal with chronic suppuration in the sinuses is by surgical drainage. And there is no place in surgery where half way measures are more futile. The drainage must be adequate and thorough. In the great majority of cases the maxillary sinus is the one involved. My operation of choice is the intra-nasal one, by the removal of the anterior tip of the inferior turbinate

and the resection of the naso-antral wall. I take away as much of the naso-antral wall as possible and hope to make an opening that is permanent. Since I have been following the procedure I have never had to do what is called the radical operation or the operation of Caldwell-Luc, combining the intra-nasal operation with the operation through the alveolar process.

In the case of ethmoid disease I believe in total eradication of the ethmoid cells as far as possible. If we leave some of the cells they are sure to become infected and give subsequent trouble.

By far the most serious of all sinus suppurations is empyema of the frontal sinus. It was until a few years ago the despair of nose and throat specialists. Perhaps no problem of surgery has been the object of more world-wide study, and none perhaps in which the results were most discouraging. Every possible method of attack was brought forward, each with its promise of solution, only to be discarded as unsatisfactory. For a time the advocates of the intra-nasal operation would have supremacy and then the pendulum would swing to the advocates of the external operation until the resulting hideous deformity would drive men to seek another method.

In the January number of the "Laryngoscope" for 1921, R. C. Lynch, of New Orleans, described the technique of a frontal sinus operation which he had devised by taking details of technique from a number of operators. His reported results were surprisingly satisfactory. He reported at that time fifteen cases. Since then he has reported a total of seventy-five cases and the results seem satisfactory and permanent. I have now done five cases according to his technique and the results have been exceedingly happy. He does not touch the anterior wall, so that there is not deformity. He removes the entire floor of the frontal sinus and the paper plate of the ethmoid, thus securing a large drainage area into the nose. Two of my cases were operated on three years ago and one a year ago. There is no pus in the nose

and no crusting. I feel that Dr. Lynch has devised an operation on the frontal sinus that is as satisfactory as a simple mastoid operation.

The sphenoid sinus presents great difficulty in diagnosis on account of its situation in the body of the sphenoid bone. Its natural opening is hidden by the posterior tip of the middle turbinate, so that pus issuing from it is hard to detect. On account of so many overlying structures a satisfactory shadow is difficult to secure upon the x-ray plate, but when a diagnosis can be made, the sphenoid responds kindly to surgical treatment. It labors under the same difficulty as the maxillary sinus in that the natural opening is situated high up above the floor of the sinus and adequate drainage is impossible after the ciliated action of the epithelium is destroyed by disease. By means of punch forceps we remove the anterior wall of the sphenoid, giving ample drainage and resulting as a rule in cure of the empyema.

Disease in the sphenoid is responsible for many cases of catarrh with foul odor characterized by formation of crusts high up in the posterior region of the nose. These cases are nearly always wrongly diagnosed as ozoea. Empyema of the sphenoid is especially prone to cause eye symptoms, such as lachrymation, photophobia, suffusion and redness of the conjunctiva. It may cause retro-bulbar neuritis or complete blindness by pressure upon the optic nerve.

While I have spoken of the various complications of sinus disease, I wish to emphasize one that has been brought home to me forcibly. I was somewhat surprised in reviewing our cases of acute mastoid abscess to find that practically all our cases done during the last four years had empyema of one or more sinuses. There should be nothing surprising in the fact, however, when we consider that the pus draining into the post-nasal space passes over the orifice of the eustachian tube. The surprising thing is that they do not all get infection in the ears.

When I was asked to present a paper before the general session of our State Society I knew at once the subject I would like to discuss with you, but I was doubtful of my ability to present the matter to you clearly. I will try to set out the points I wish to impress upon you. First, that disease of the accessory sinuses of the nose is very common. Second, that it is the underlying cause of a great deal of bad health. Third, that in the great majority of cases of sinus disease there is nothing in the symptoms of the case to attract the attention of either the patient or the family physician to the sinuses as the underlying cause of the disease. In other words, in the great majority of cases, the patient is not conscious of any pain, and the discharge is not noticeable. There may be no obstruction to the breathing. The cause of their trouble is obscure and they are liable to slip through our fingers, to our shame, with their troubles undiagnosed. Therefore, I come before you pleading the cause of the patient who is not sick enough to go to bed, who is on his feet but dragging around, who has no pep, no appetite, whose digestion is disordered, color bad, is very nervous. This is the patient who is given a careful physical examination, but nothing abnormal can be found. He is told that he is run down, that he has been working too hard, that he is allowing trifles and petty details to unduly irritate him, that what he needs is rest and a tonic. This is the patient who is the potential victim of nephritis, endocarditis, rheumatism, arthritis, ulcer of the stomach, cholecystitis and above all the deadly acute respiratory diseases, pneumonia in all its forms, influenza, bronchitis, asthma, etc. Just here allow me to quote from the report of the Chicago Pneumonia Commission: "The acute respiratory diseases cause more deaths than all the other infectious diseases combined. This report is based on tabulations in which pneumonia of all forms, acute bronchitis and influenza are classed as acute respiratory diseases and the other infectious diseases include

besides tuberculosis, all major infectious diseases except the venereal disease group and its consequences. During the last twenty years there occurred in Chicago 110,903 deaths from acute respiratory diseases as compared with 99,096 deaths from all other infectious diseases. In the last ten years deaths from acute respiratory disease constituted three-fifths of all deaths from infectious diseases." Are not these figures appalling? And if it is true that in all post-mortems performed on cases dead of pneumonia, pus has been found in some one of the sinuses, does not the study of sinus disease merit our very best efforts?

Therefore I beg of you to be keenly alert to the situation and be on the lookout for the patient who has frequent colds, who has periodic attacks of hoarseness, who is run down, who has an unexplained cough, who lacks vitality and pep, to say nothing of definite signs of focal infection, such as rheumatism, nephritis, endocarditis, etc.

I will report a few illustrative cases:

Mrs. R., middle-aged, has been an invalid for years. Had made trips to clinics in the East and had spent much time in California in search of health. Great sufferer from asthma; had been diagnosed as T. B., x-ray showing definite changes in lungs. Got out of bed to consult me for glasses. Tall woman, very much emaciated; apparently very feeble. Weighs less than one hundred pounds. Nasal examination discloses polypi in both ethmoid regions. Transillumination shows both antra dark; x-ray confirms findings. Both antra opened and drained at one sitting. The ethmoids were exenterated later. Improvement slow but steady. Now in splendid health and has gained more than fifty pounds in weight.

Mrs. C., well past middle age, has been almost helpless with rheumatism for years. Walked with difficulty and could not go about alone for fear of falling. Had had polypi removed from left nostril at intervals for years. Great sufferer from asthma. Transillumination and x-ray showed both antra dark. Both antra opened and drained at one sitting. Tonsils removed later. Large abscess found in right tonsil, in the center of which was found a calculus about the size of a hazelnut. Left ethmoid exenterated later. Health greatly improved; walks without difficulty, though still somewhat timid. Asthma entirely relieved.

Mrs. S., has had cold since last October, since which time she has been quite hoarse. General appearance bad. Has been generally regarded by her friends as affected with T. B. Has rheumatism and high blood pressure. Had no thought of sinus trouble. Transillumination and x-ray showed both antra dark. Left antrum the worse. Both antra opened and drained. Hoarseness dis-

appeared in a few days. Blood pressure came down to normal in two weeks.

Mrs. S., has been crippled with rheumatism for twenty years. Has had to hold on to both banisters going up and down stairs. Has been a great sufferer and has been under constant treatment for many years. I removed her tonsils some fifteen years ago. Her general condition was benefited but the rheumatism persisted. I had not seen her for a number of years until three months ago she came to the office suffering excruciating neuralgia pain in the face. Transillumination and the x-ray showed involvement of both antra. The next day both antra were drained by a large opening through the nose. Both were filled with a quantity of foul pus. The pain disappeared at once, and under daily irrigations the antra cleared up in a few weeks. The rheumatic condition is greatly improved. She goes up and down stairs without trouble and in general appearance she looks like a different person.

So, therefore, I conclude that a condition that is so widespread, so easily overlooked, and so mightily fraught with danger to life, to health, to efficiency and to happiness merits our most serious consideration.

DISCUSSION.

DR. H. S. SHOULDERS, Nashville: There are a few points that I wish to emphasize about the x-ray examination. First, in acute sinusitis we may many times overlook a sinus involvement. Second, is the importance of the complete examination, as Dr. Cullom brought out. Here the x-ray is of vast importance. This slide shows you the normal sinus, perfectly clear. In the chronic sinus I can say, I believe without fear of contradiction, that the x-ray plate will be correct in the majority of cases.

There is one little thing that we have had some difficulty in impressing upon some of our dental friends. They say that because an area which is dark around a tooth is called an abscess, every dark shadow in the sinuses means a diseased antrum, where, of course, the physics of the thing is just the reverse. This slide might be mistaken for a diseased frontal sinus, knowing that we had a diseased antrum. We might make a diagnosis of a pan-sinusitis on one side, when in fact only one sinus was involved.

In this case the frontal sinus is entirely absent. It is easy to make a mistake in the diagnosis of these cases, as I will demonstrate with a series of slides. (Presented series of lantern slides.)

One thing in the technic of making the examinations is to make two exposures, one with the forehead on the plate with the ray coming straight through the sinus. In the other we instruct the patient to put the chin and nose on the plate and then pass the ray through the antrum. That enables us to eliminate the bony structures and makes a clear-cut picture.

DR. WILLIAM D. HAGGARD, Nashville: Just a word as a general surgeon about one case, which I think will add a moral. We were confronted with a man with a neuralgia over the posterior occipital nerve on the right. The pain was very intense and excruciating. The man was a banker and was incapacitated for days at a time. He had been through the hands of very excellent men, including our neurologist, but nothing was done. When we were asked to see him the information was that everything had been done—the teeth and sinuses had been x-rayed and no focus found to account for the condition. We rather took this for granted for the time being and looked upon the condition as neurotic. We treated him accordingly, with some benefit perhaps, but soon afterward the neuralgia came back. It was almost like a *tic douloureux*, very acute. It became so bad that on one occasion we injected novocain with quinin hydrochlorid to block the nerve, but there was only temporary benefit. He was about to drift into morphinism and I had about made up my mind to dissect the nerve, when in checking over the case we asked to see the x-ray pictures of the antrium. None had been made, so we made some and found both frontal sinuses infected. Dr. Cullom drained these sinuses

and the man since then has had no pain and the condition has cleared up as if, by magic.

We are so imbued with the idea of focal infection, but this is such an extreme example of the particular type of infection that Dr. Cullom has done so much for in this city, in instructing the general practitioners, that I wished to recite this brilliant case, which shows how much can be accomplished if we can find the cause and thereby apply the remedy.

DR. M. M. CULLOM, Nashville (closing): There is nothing I can add, but I do wish to thank the gentlemen for being so patient. I am sorry that we could not have had more here, for I would like to hear some of the other men in my line talk about it. There are cases like these all around us, and if we examine carefully we will find many of them. It has been our fault largely because we have heretofore been governed by local symptoms and complaints that dealt with the region only. Since we have been looking for focal infection we have been finding these cases where we least expected them. I hope we will all take a lesson from the cases such as Dr. Haggard reported and make a more systematic and complete examination of these patients.

LEUKEMIA*

W. T. DESAUTELLE, A.B., M.D., Knoxville

LEUKEMIA is a condition in which there is extensive hyperplasia of the leucoblastic tissues of the body with the appearance in the circulating blood of white cells not normally there and usually an increase in the number of normal leucocytes, but not always.

Two main types are distinguished, one in which the hyperplasia affects especially the myeloid tissue and results in a large number of circulating myelocytes—myeloid leukemia, and another in which the hyperplasia affects especially the lymphoid tissues and results in a large number of circulating lymphocytes—lymphoid leukemia. In either case the process may be acute or chronic.

Leukemia is a relatively rare disease. In hospital practice, there are only one or two leukemic patients per thousand admissions. In 10,332 patients admitted to the Knoxville General Hospital, there were only six patients who suffered with leukemia; two of these had acute lymphatic leukemia, one chronic lymphatic leukemia, and three chronic myeloid leukemia. Four of these six were men, and two were women. Three were colored and three white patients. Men are more frequently affected than women as the above figures indicate.

The etiology of the condition is still unknown, but on the one hand the disease appears to be infectious in nature and on the other to be of the malignant neoplastic type of disease. The latter view is based on the fact that there is an unrestrained growth of certain cells. It differs from the ordinary neoplasm in that it has no local origin, but arises from tissues belonging to a certain system—lymphoid tissue and myeloid tissue. Transitions to

localized tumors do, however, occur. Chloroma are usually associated with leukemic blood pictures.

The relation of myeloma is not so intimate. It may consist of myelocytes, lymphocytes, plasma cells or erythroblastic tissue, but the blood picture is not characteristic. Lymphosarcomata show an aggressive infiltration of lymphatic cells, but all of the lymphatic tissues are not equally involved and blood changes may be absent. Three cases of lymphatic leukemia in x-ray workers and one of a man working with radium are quoted in favor of the view that leukemia is a form of malignant neoplastic disease.

The infectious theory is supported by the fact that the acute type of the disease usually runs a course strongly suggesting an acute infection, with high fever, prostration, and a hemorrhagic tendency. Two of our cases ran such a course and one followed shortly an attack of what was termed influenza with a severe cough. Experiments in transmitting chicken leukemia to normal fowls support the infectious theory. This could be accomplished even though all cells had been removed by filtering. Some of these inoculated fowls developed the myeloid type of the disease, while others developed the lymphoid form.

In chronic myeloid leukemia, the most conspicuous change is in the spleen, which is greatly enlarged, weighing as much as 10,000 grams. One of our patients had a splenic tumor, which extended down nearly into the pelvis. The capillaries and sinuses are distended with myelocytes of all kinds; a few red cells, and some erythroblasts are present. The liver, as a rule, is enlarged, its vessels being filled with myelocytes. Tumor-like masses of them may be found

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between the liver cells. The other organs almost always show more or less myeloid infiltration. The lymph glands and the rest of the lymphoid tissue appear to take no part in the process. The bone marrow in the long bones is no longer fatty, but firm, opaque, yellowish gray or pinkish and homogeneous. It consists of great numbers of neutrophilic myelocytes, eosinophilic myelocytes, basophilic myelocytes, leucocytes of all kinds, and red corpuscles.

Non-granular mononuclear cells of rather large size, myeloblasts, are also present. Many neutrophile leucocytes are there, but red blood cells and erythroblasts are few in number. Probably the anemia in this, as in other types of leukemia, is due to an actual crowding out of the erythroblastic tissue rather than to hemorrhages.

In chronic lymphoid leukemia, the most conspicuous change is the enlargement of the lymph nodes. Any or all of the lymph nodes may be affected, the localization and distribution of the process conforming to no known rule. The cervical, axillary and inguinal regions are most often affected. The tonsils and pharyngeal tissue may become enlarged late in the disease, but this is not invariable. The spleen is generally enlarged, but not to the same extent as in the chronic myeloid type. The histological changes are all occasioned by the extraordinary overproduction of lymphocytes which in most of the chronic cases are small lymphocytes. The spleen and lymph nodes appear as a solid uniform mass of lymphocytes. In the bone marrow there is usually almost complete replacement of the ordinary cells by spreading masses of lymphoid tissue.

Acute lymphoid leukaemia is more common than the chronic type. The tonsils and pharyngeal adenoid tissue are often greatly enlarged. One patient, a young man, with a deathly pallor, showed pedunculated tumors, besides many large nodules on the posterior pharynx. The lymph glands may be but slightly enlarged, but are usually easily palpable or may form

masses. The spleen may or may not be enlarged. On section the lymph glands frequently show hemorrhages and histologically the sinuses contain great quantities of lymphocytes. The intestinal lymph nodes and Peyer's patches are frequently affected, as in typhoid fever, and as hemorrhages occur they may become ulcerated. The kidneys of one of our cases were enlarged, and nearly wholly white, due to the enormous number of cells gathered in the intestines, and in this case replacing more than half of the renal tissues.

In chronic myeloid leukemia, the onset is insidious. The patient complains of weakness, hemorrhage or a mass in the abdomen. Anemia, dyspnoea, palpitation, dizziness and oedema may occur. Hemorrhages from various parts are common at all periods, epistaxis being the most frequent. Retinal hemorrhage, labyrinthine hemorrhage may occur early. Digestive symptoms, flatulence, nausea, vomiting, diarrhoea are often troublesome features. Irregular fever occurs from time to time. The most important physical signs are the enlarged spleen and liver. The former may be quite enormous.

The blood picture is of the first importance, and alone is distinctive. The most striking feature is the great increase in the number of leucocytes, the count usually varying between 100,000 and 500,000 and counts of 1,000,000 leucocytes have been recorded. Special importance attaches to the large number of myelocytes, cells which normally do not enter the blood, but which in myeloid leukemia constitute from ten to fifty per cent of the total number of leucocytes. The neutrophilic myelocytes are much more abundant than the eosinophilic. The total number, and as a rule, the percentage of eosinophile and basophile leucocytes is increased. This is the only condition in which there is an increase of the basophilic leucocytes. The red cells are reduced in numbers and may not exceed the number of leucocytes. Normoblasts appear frequently.

A rather extraordinary blood picture

which for a time suggested a leukemia, occurred in a patient who entered the hospital with an incomplete abortion. She had bled considerably, but did not appear exsanguinated. The retained membranes had been removed, when it was discovered that she had a white count of 128,200, polymorphonuclear neutrophils sixty-five per cent, eosinophiles one per cent, lymphocytes five per cent, large mononuclears eleven per cent, myelocytes eighteen per cent, and many nucleated reds. The red cells numbered 1,250,000; the haemoglobin was thirty-eight per cent. Two days later the white count rose to 144,400, the nucleated reds decreased, and the myelocytes remained the same. Many of the white cells were very difficult to differentiate.

There were no signs or symptoms to account for this extravagant leucocyte pro-

duction. Her fever was not exciting, it reached 100 degrees on the three days following the curettement, and then remained normal for six days, when she had a fever of 100 degrees for three days, after which it again returned to normal. On the eighth day after admission, the signs of a low grade central pneumonia reached the surface, and at this time the count dropped to 32,000, the neutrophils rose to eighty-two per cent, the lymphocytes thirteen per cent, large mononuclears three per cent, and myelocytes one per cent.

The patient remained in the hospital nineteen days longer, during which time the red blood cells gradually increased in number, the white cells decreased to normal, and the differential count returned to the normal percentages. Following is detailed chart of blood counts in this case:

Date	R. B. C.	W. B. C.	Hgb. %	P. M. N. %	Eos. %	Bas. %	Lymph. %	L. M. %	Trans. %	Mye. %	Nuclated Reds %
1/22/25	-----	37,800	--	87	0	0	23	0	0	0	0
1/24/25	1,250,000	128,000	38	65	1	0	5	11	0	18	Many
1/26/25	1,280,000	144,400	40	65	0	2	5	5	0	18	8
1/30/25	-----	32,300	--	82	0	0	13	3	0	1	5
1/31/25	1,650,000	20,000	35	72	0	0	25	3	0	0	3
2/ 4/25	2,300,000	13,050	40	56	5	7	30	1	1	0	3
2/10/25	3,650,000	14,200	50	55	4	1	31	4	5	0	0
2/14/25	3,500,000	11,650	60	66	0	1	26	7	1	0	2
2/18/25	3,000,000	9,650	60	48	3	1	45	3	0	0	0

These changes, no doubt, were the result of the double strain on the haematopoietic organs of a rather severe hemorrhage and a pneumonia, but the lack of symptoms of the latter suggested a leukemic condition.

The symptoms of chronic leukemia are also insidious, and in the majority of cases the patient is first made aware of his disease by enlargement of the lymph nodes. The neck, axillae and groins are the favorite sites.

Occasionally there are no external tumors, but on post-mortem, large nodular masses are found in the thorax or abdomen. Digestive disturbances are not so pronounced as in myeloid leukemia, and hemorrhages are uncommon. Irregular fever of low grades may accompany the process. The spleen is palpable, but never attains the size met with in myeloid leukemia. Cough, due to enlargement of the bronchial glands, may be a troublesome symptom, and toward the end of the dis-

ease, dyspnoea due to anemia, or to leukemic infiltration of the lungs is often a conspicuous feature.

The blood changes are characteristic. The number of leucocytes is high, averaging between 100,000 and 500,000, although as a rule it is not frequently as high as that in the myeloid type. The small mononuclear elements, or lymphocytes, dominate the blood picture, and they may constitute ninety or ninety-five per cent of all the white cells. In this chronic disease, the lymphocytes present are chiefly of the small variety, though these may differ from normal small lymphocytes in that the azure granulation is present in a smaller proportion of the cells than normal, or it may be absent altogether. In addition to the small lymphocytes, larger forms frequently appear, either ordinary large lymphocytes or Rieder cells. Sometimes plasma cells are also present. In rare cases the majority of the white cells

may be large lymphocytes, and these may contain azure granules.

Acute myeloid leukemia, though a rare disease, is commoner than has heretofore been suspected. Many of the cases formerly described as acute lymphatic leukemia are now known to have been acute myeloid leukemia, in which the white cells consist almost wholly of the non-granular myeloblasts. This affection runs the course of an acute malignant infectious disease, with high fever, hemorrhagic diathesis and rapidly developing anemia. Normoblasts often appear in the blood. Myeloblasts closely resemble the large mononuclear forms (lymphoblasts) of lymphoid leukemia, but can easily be distinguished by the oxidase reaction. These cells (myeloblasts) give an intense blue reaction with alpha-naphthol and dimethyl paraphenylene diamine, which in the presence of an oxidizing ferment produce indophenol blue. This reaction is also given by myelocytes, the polynuclear leucocytes, large mononuclear and transitional forms. None of the cells of lymphoblastic origin give this reaction.

The symptoms of acute lymphatic leukemia are sudden in onset, like that of an infectious disease, and is a disease distinct from chronic leukemia, but no organism has as yet been demonstrated as the etiological factor. It occurs most often in children and young adults. Both of the cases in our clinic were young men, one twenty-three and the other twenty-five years of age. It is usually fatal within two months after onset. Cases lasting longer than this belong under the head of chronic lymphatic leukemia. Both the patients I saw dated their trouble to an attack of influenza, two weeks and four weeks, respectively, previous to admission to the hospital. Fever, headache, pains in the limbs, sometimes vomiting, chill, often usher in the disease. Swelling of the gums and oozing of blood from them occur early. One young man first consulted a physician on account of a severe hemorrhage from the mouth and throat. More followed. Another suf-

fered with the disease forty-two days before a slow but steady epistaxis began. It could not be stopped. Ulcerous or gangrenous inflammation of the mouth, gums or tonsils is often present. One patient had a most extensive anasarca and considerable ascites which disappeared after seven days in bed. Enlargement of the lymph nodes and spleen is moderate. The liver is not so often affected, but one boy had a perfectly huge liver, and at autopsy an excessively large thymus was found.

The leucocyte count is high, 50,000 to 200,000. Nearly all of the white cells are mononuclear cells, sixty-two per cent in one case and ninety-eight per cent in the other. These mononuclears are mostly lymphocytes, with a goodly number of lymphoblasts. A disconcerting blood picture appeared with one boy. The first differential count showed ninety-six small lymphocytes. Two days later another showed ninety per cent large non-granular cells, which appeared so like myeloblasts that the original diagnosis of lymphatic leukemia was questioned. The oxydase reaction, however, demonstrated only a few cells staining the blue color, indicating myeloblast cells. This shower, or deluge of lymphoblasts, appeared two or three times later in subsequent differential counts in this patient's blood. The red blood cells and haemoglobin diminish rapidly as the disease progresses. A drop of 700,000 red cells was observed in three days, even though no hemorrhages had occurred. This was rather serious, as the count was only 2,000,000 erythrocytes at the time. The blood platelets are usually diminished in acute lymphatic leukemia.

Cohnheim used the term pseudoleukemia to describe a case in which there was marked lymphoid hyperplasia in the lymph glands and other lymphoid tissue, but no leukemia. A year and a half ago there came under our observation a patient with a very large spleen and a leucocyte count of 11,700, polymorphonuclear neutrophile cells eighty-two per cent, eosinophiles one per cent, basophiles 0, small mononuclears

sixteen per cent, large mononuclears one per cent, transitionals 0. The spleen was removed and the surgeon noted that all the mesenteric and many retroperitoneal glands were much enlarged. Gradually the external lymph nodes increased in size, but no other changes took place. A few days ago the patient noticed another mass in the abdomen, which proved to be a lymph gland tumor about the size of a small orange, but the blood picture has changed considerably. The leucocytes now number 19,500, polymorphonuclear neutrophils fifty per cent, eosinophiles two per cent, basophiles one per cent, small mononuclears thirty-nine per cent, large mononuclears two per cent, lymphoblasts three per cent, and transitionals one per cent. The description of pseudoleukemia may have fitted this case over a period of some months, but these later findings designate it as one of chronic lymphatic leukemia. Doubt has been expressed as to pseudo-leukemia being a pure clinical entity. It is certainly a rare type.

The prognosis of the acute leukemias is always unfavorable. Both of our cases of acute lymphatic leukemia died in less than two months after onset, and each with hemorrhage, one as a result of a massive hemorrhage from the intestines, the other from a gradual oozing from the throat.

Two cases of chronic myeloid leukemia are still alive and able to go about two years after discovery of the disease. One has been lost track of. The single case of chronic lymphatic leukemia is also living, being able to do most of her housework. She may have two years longer, as the progress seems to be slow. Five or six years seems to be the maximum duration of life for those suffering with chronic myeloid leukemia.

No cure has been found for these diseases. X-ray and radium will reduce lymph gland and splenic tumors, decrease the great numbers of circulating white cells, and give comfort to the individual for shorter or longer periods of time.

DISCUSSION

DR. J. B. McELROY, Memphis: Like many other medical subjects, leukemia is surrounded by a great many obscurities. You will note this from the very excellent paper which Dr. de Sautelle has presented. In the first place, the definition of the disease is not clear. The doctor described leukemia as being due to a hyperplasia of the leukoblastic tissue, associated with an increased output of leukocytes in the circulation. This is the definition which is usually given, but there may be an enormous hyperplasia of the leukoblastic tissue without an increased number of leukocytes in the peripheral circulation, which is spoken of as aleukemic leukemia. It is true, however, if these cases are followed closely and long enough there will probably be at some time an increased number of leukocytes in the blood.

At this stage the diagnosis is materially advanced by microscopic sections of removed lymph gland. Also in these cases where you have a predominating large cell and are not decided as to whether it is a lymphoblast or a myeloblast, you frequently encounter some of the granular cells which could help in the diagnosis of the myeloblastic type.

I have had three such cases in the last year in which it was very difficult to tell at first whether they were acute lymphatic or myeloid leukemia. These cases started just as Dr. de Sautelle described hem, following mild infection about the mouth, and may be associated with enlarged lymph nodes. Leukocytes may not be much increased; one of my cases remained so for a long period of time until just before death, when there was a large output of leukocytes in the circulation. The sectioning of the glands showed quite distinctly the myeloid metaplasia of acute myeloid leukemia.

DR. R. B. WOOD, Knoxville: Leukemia has interested me recently because I had an opportunity to observe three cases of the acute lymphatic type. I have never seen a case of the myeloid type and my observation has been limited to the three cases of the other type. I was further interested because they did not last more than one week after coming under my observation. One case had an added interest in that the x-ray was tried in the acute type, and the patient died within a few hours. The third case was interesting in that it had the history and all the symptoms of an acute appendicitis. In this case we had a leukocyte count of 130,000. In view of the history, one-sided rigidity and pain, the surgeon opened the abdomen. The pain apparently was due to hemorrhage into the wall of the appendix, as this was the only pathology present.

One thing not emphasized in the paper or by Dr. McElroy is the hole of the blood platelets in

the leukemiaes. They are extremely variable. They may be above or below normal, but in the acute type are practically always below normal. The normal count being from 200,000 to 350,000, we find in acute leukemia they may be as low as 40,000. Anything below this is extremely liable to hemorrhage. The platelets offer one thing regarding the prognosis, especially in the chronic type. If while under radiation the platelets approach normal, that is if they have been above normal and come down, or if they, having been subnormal, now approach normal, in association with improvements of other cellular elements, the prognosis is better.

DR. W. T. de SAUTELLE, Knoxville (closing): I wish to thank the gentlemen for their discussion, but I am surprised that we did not hear from the x-ray men. They seem to have missed a very good opportunity to discuss the question of roentgenotherapy in this disease.

The leukemias, on careful study, if you have not already taken up the faith, will convince you of the dual origin of the leukocytes. If that does not satisfy you, then the oxidase test will show you that the myeloid type are stained blue, while none of the cells of lymphoblastic origin give this blue reaction, and that is very definite.

EMBRYONAL ADENOMYOSARCOMA OF KIDNEY*

TOM BARRY, M.D., AND RALPH MONGER, M.D., Knoxville

IN a review of the literature on renal tumors one is forcibly impressed with the confusion in classification. Thus we find the (1) mixed embryonic tumors of Wilms, adenosarcoma (Ziegler), composite tumors (McCallum) and adenomyosarcoma described by Ewing. We feel that Ewing's classification is more descriptive of the pathology and should be universally adopted. We are also of the opinion that all malignant tumors should have an additional classification as to their relative malignancy as suggested by Bumpus (2). In a series of bladder tumors he classified them into four scales. He graded them I when three-fourths of the epithelium was differentiated, and one-fourth undifferentiated; when the differentiated and undifferentiated epithelium were about equal they were graded II; if the undifferentiated epithelium formed three-fourths and the differentiated epithelium one-fourth they were graded III, and the grade IV was in those cases in which there was a tendency to no cell differentiation. His conclusions were that as the scale ascended the greater were the malignant characteristics, less efficacious was any form of treatment, and the duration shortest. Applying this case to this case we believe that this would come under the third class, as about three-fourths of the epithelium is undifferentiated and one-fourth differentiated. The general classification of Cabot (4) into three general headings, namely: (1) the Gratzwitz tumors, (2) tumors of the renal pelvis, and (3) tumors of childhood is an excellent one.

Pathogenesis. The renal sarcomata of infancy arise in the connective tissue of the renal sinus. The epithelial cylinders are

due to the entanglement of uriniferous tubules, in consequence of the sarcoma invading the cortex, while the striated spindles are derived from the muscle tissue of the renal pelvis. These studies are at least suggestive of an extrarenal origin. The sarcomata of adult life arise from the normal tissues of the hilum and have no embryonic derivation. While the exact pathogenesis of these tumors is at present not clear, there are three commonly accepted views. (1) That they arise from the Wolffian body, (2) from the embryonic kidney, or (3) aberrant cells of the myotome or other similar structures. (Wilms). Wilms recognizes round cell sarcoma, spindle cell sarcoma, adenosarcoma and mixed tumors. The latter is the most frequent type encountered. Cabot in thirty-one cases found twenty-four mixed, three spindle cell, and one each of the small round cell and adenosarcoma. This predominance of the mixed type tumor will probably be more evident as pathologists come to recognize the above classification. Of all malignant tumors of the body renal tumors represent .05 per cent, and of these sixty-five per cent are hypernephromata. Rohrer (6) claims that one-third of all carcinomata of the kidney occur in childhood.

Etiology. In reviewing the cases reported of renal tumors one is struck with the large number of cases associated with injury. Welker (7) reports thirty such cases. There were eight with family malignancy. We believe that the relation of trauma is not important except that by it the family or doctor's attention is first called to the child and a tumor is discovered.

We speak of individuals being of cancer age when they reach fifty or thereabouts. So with children we find a cen-

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cer period. One hundred and thirty-six of Welker's (6) 142 cases were under ten. In 130 of Taylor's cases sixty were under four years of age. Thus we see the greatest incidence in the first three years of life, becoming less frequent from three to ten, and relatively rare from ten to forty-five. Males seem to be more often affected than females (6). These tumors are about equally divided between the right and left side.

Symptoms. Unfortunately symptoms are usually absent until the disease is far advanced. Unlike the tumors of adults, hematuria is present in little more than fifty per cent of cases and may be so slight and transient that its importance is not recognized. Pain is rarely complained of, and when present is due to pressure on vessels and nerves. Tumor is the most common finding and is present in ninety-five per cent of cases reported. Digestive disturbances, constipation, diarrhea, dyspnea, ascities, edema, cough, cachexia and emaciation are terminal symptoms. Fever is present in a small percentage of cases.

Diagnosis. Early recognition of the condition is paramount and offers the only hope to a successful treatment. Kretschmer (4) found albumen present in the urine in thirty-six of fifty-four cases, red blood cells in twenty-four, pus in twenty-three, and cultured urine from both kidneys sterile in thirty cases. These were in adults and represent a larger percentage of abnormal urines than are found in children. Plain x-ray is of some value in determining the relative size of the two kidneys, but is not reliable. Separate functional tests are of value if the output from the suspected side is definitely lower than of its healthy mate, but if the function from both sides are normal it does not rule out tumor, since a large proportion of cases are limited to one pole as in authors' case.

Pyelogram is of inestimable value in arriving at a definite diagnosis. By this method differentiation from polycystic kidneys, hydronephrosis and other intrarenal as well as extra renal conditions is accu-

rate. If the ureteral pyelogram shows a gross abnormality the possibility of either a renal or extrarenal tumor or both should be considered. If the calyces are definite, renal tumor is certain. An extrarenal tumor will often markedly displace the ureter mesially or to outside and the ureter may enter the pelvis from the posterior aspect, but will cause no abnormality in the outlines of the pelvis or calyces. Unless the tumor involves the renal substance the pyelogram will be normal as in authors' case.

Treatment. Early nephrectomy in every case followed by irradiation offers the only hope of cure. If the tumor is not large the operation should be extraperitoneal, but in most cases a transperitoneal approach will be found necessary and is not attended by a larger mortality than the former. Operability depends on the absence of metastasis as shown by x-ray and by physical examination, and on an adequate function of the opposite kidney. Water is the sheet anchor in both preoperative and post-operative treatment. It should be given by mouth preferably and supplemented by intraperitoneal and subcutaneous administration.

Mortality, unfortunately, is very high. The immediate operative mortality is above forty per cent.

Case Report. White female, age 23 months. A full term baby of normal delivery and breast-fed for one year. There was no history of malignancy in the family. The previous history is unimportant. The child progressed normally until about two months previous to entrance to hospital, at which time the father stated that while playing the child accidentally fell from a chair. This accident went unnoticed until a few weeks later, when they noticed a change in the disposition of the child in that it was becoming more fretful and irritable. One morning the mother was dressing the child and she noticed when she would touch the left side of abdomen the child offered resistance and would cry. And at this time the parents noticed that this side of the abdomen was larger than the right side. Since this time the left side of abdomen has been gradually increasing in size. There has never been any urinary disturbances and neither has there been any hematuria. For several days there has been a feeling of fullness and discomfort in abdomen, aggravated by eating.

Examination. Temperature, 99.2; pulse, 120; respiration, 24. The child did not appear to be very ill. Nutrition was fair. Skin and mucous

membranes very slightly anemic. General examination was negative except for an asymmetrical enlargement of the abdomen. The left side of abdomen was enlarged and there was a distinct tumor visible in the upper left quadrant. On palpation a mass could be felt extending from the lower border of the left costal area across to the midline and reaching down to one inch of the iliac crest. It is smooth in outline, of a firm consistency and slightly movable. There was moderate tenderness over the tumor on palpation. There was no edema of the extremities, and no adenopathy could be made out. The urine was negative on several examinations. The white cell count was 15,600 and the differential was normal. Hemoglobin was sixty-two per cent and the red blood cells 3,500,000. A provisional diagnosis of renal tumor was made and a urological examination advised. Cystoscopic examination under light ether anesthesia reveals an entirely normal bladder and apparently normal urine is seen spurting from both ureters. The left ureter was catheterized. Pheno-sulphonephthalein appeared through catheter in six minutes, and from bladder in five minutes. For a fifteen-minute period the output from the left kidney was twelve per cent and from bladder fifteen per cent. Pyelogram shows a marked outward displacement of the ureter with the renal markings within normal limits. X-ray of chest and spine showed no evidence of metastasis. In view of the above findings a diagnosis of an extrarenal tumor was made and operation advised.

Operation (Kern). The operation was performed through the lumbar incision described by W. J. Mayo. The tumor was easily extirpated, there being no hemorrhage of any significance. The wound was closed completely and no drain placed. The time of operation was twenty-five minutes.

Course. Patient left operating table in good condition and did very well for several hours, the pulse remaining at good volume until end. At 6 p.m. on same day of operation patient became dyspneic and a large amount of frothy fluid exuded from the mouth. Examination of chest at this time showed evidence of rapidly approaching edema of lungs. This continued to increase in severity and patient expired at 7 p.m. same day of operation. Autopsy was refused.

Pathological Report. Gross appearance. Tumor weighs 525 gms. The measurements are 14cm.x 14cm. It is of an ovoid shape. On first inspection the only thing suggestive that the kidney might be involved in the mass is the ureter which extends outward from the lower part of the mass, for a distance of 5cm., and on opening this the pelvis of the kidney was identified. The external surface is covered with a thick fibrous capsule which is very vascular. When the capsule was removed from the tumor the kidney was found to be lying in the upper part of the mass. The area of the capsule still in contact with the kidney stripped easily, leaving a smooth and very pale external surface. The consistency of the tumor varies, in some areas it is firm, while in others it is soft. On section the cut surface is variable in appearance. The upper pole of the kidney on the posterior surface is firmly attached to the tumor mass, while the lower and middle areas can be rather easily separated from the tumor mass. It seems, therefore, that the tumor has its origin from the upper pole, posterior sur-

face. On section the kidney shows the cut surface to be very pale, the cortex measuring 2.3 mm., the cortex and medulla together measuring 12 mm. The normal cortical striations are very vaguely defined, the medullary pyramids are pale. The pelvis is moderately enlarged, the mucosa thickened, and in the latter are many petechial hemorrhages. The remainder of specimen shows numerous larger and smaller dark red and light red hemorrhagic areas, which alternate with bluish colored areas of degeneration, and other areas of a pearly color.

Microscopical. Paraffin sections stained with hematoxylin and eosin and Van Gieson's connective tissue stain show the following: The most distinguishing feature of the sections is the embryonal structure. There are numerous larger and smaller areas composed of cells, which are variable in appearance; some are high columnar and others are cubical in shape. The greater number of these are collected in small islands, but in only a few instances is there a lumen which is well defined. These cellular areas are imbedded in a stroma of loose, succulent, moderately edematous connective tissue richly and diffusely infiltrated with connective tissue cells which are variable in size and shape, but the majority are spindle shaped and many contain mitotic figures. There are many large irregular areas of necrosis, and many large hemorrhagic areas. Scattered throughout the sections are many small cysts; these are lined with cubical cells and the lumen is empty. The blood vessels are numerous and are variable in size, but all have thin walls. The growth shows yellow in the sections under Van Gieson's stain. Sections taken from the kidney show only a moderate cloudy swelling of the tubular epithelium and anemia.

Summary. This tumor is then an embryonal adenomyosarcoma, lying within a distended renal capsule, with origin from the upper pole of the kidney.

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DISCUSSION.

DR. BUIST LITTERER, Nashville: Dr. Barry has given a very liberal and comprehensive discussion of a tumor which is very infrequently found. There is great disagreement among pathologists as to the exact classification. We have the mixed tumors of Wilms, the composite tumore of MacCallum, and also the embryonal adenosarcomas of Ewing. I agree with Dr. Barry in choosing the latter classification in that it is more descriptive of the pathology found. In a series of 169 cases, 131 occurred before six years of age. In a series of 141 cases, the condition was bilateral in ten instances. These tumors, as a rule, occur in the distended renal capsule and the most important feature is the great enlargement, which is attained rather rapidly. The largest one of these tumors on record was forty cm. in diameter, and weighed as much as 3,580 grams.

As to the microscopic picture, the most striking feature is the embryonic structure in which there is a large amount of abortive renal elements. In this, the epithelium is represented in the form of tubular and glandular structures, surrounded by a zone of indifferent spindle cells and generally both smooth and striated muscle are present.

The most frequent finding in these tumors is the presence of rapidly proliferating tissue, which may show myomatous changes.

Metastases are very infrequent, but they do occur. The most common site of metastasis is the liver, and next in order of frequency is the lung. We generally have metastasis of the liver in the round cell type, although the unstripped muscle has been found.

These growths are very prone to reoccur, especially in the first year. Considering the mortality from operation and the subsequent recurrence, it is estimated as eighty-six to ninety-three per cent mortality.

DR. RALPH MONGER, Knoxville: This is a most interesting tumor, especially from a pathological standpoint. I have made a lot of stains

on this tumor and before that could not say definitely that it had muscle tissue in it. I had to do special muscle tissue stains, such as the Van Gieson. As Dr. Barry pointed out, absolute diagnosis is the only hope of cure, and as Dr. Litterer said, the majority of all cases reported have occurred under six years of age. Furthermore, as these tumors are very rapidly growing, if we see a baby with a rapidly growing tumor in the region of the kidney we should take this type into consideration. We cannot classify the tumors as being rare, but as rather uncommon, because the cases are not reported. The tumors may arise from any part of the kidney, the upper pole, the middle portion or the lower pole, and frequently have no connection with the kidney, being entirely extra-renal. They are usually imbedded in the capsule of the kidney, as this case was.

As Dr. Barry pointed out in the paper, there was just a pedicle at the upper end, with a shaggy appearance, and as we cut sections from this we could definitely trace the origin to the upper pole of the kidney.

As Dr. Litterer pointed out, we often find myxomatous tissue, but in these cases there is usually a large amount of edema. There were a large number of spindle cells lying in the connective tissue, which resembled very much myxomatous tissue, but I am always very conservative about diagnosing myxomatous tissues, especially in the presence of edema.

DR. IRVING SIMONS, Nashville: I was glad to have Dr. Barry mention that it is necessary to open the abdomen, especially in dealing with children. We should expect to have a higher mortality from this condition than from the ordinary mortality of five per cent in the hands of even good operators. Five cases out of 100 are expected to succumb no matter what the method of approach is used. When we operate on renal tumor we should expect a higher mortality, especially in such small patients as the one reported. Because of this, most of the renal tumors we see, particularly in children, in which case we see the sarcomatous type of tumor, and in adults the hypernephromatous type, the metastasis is by way of the veins, the vena cava, or up into the lungs.

In approaching a renal tumor it is most important to make a different sort of incision. It has been my custom to make the incision lower down than the usual incision, sweeping gently downward toward the crest of the ilium. This incision in children should begin two or three inches below the horizontal angle and then sweep across. To do this we should open the abdomen, a thing we try not to do ordinarily. In this way we should avoid metastasis by way of the renal veins and try to clamp them off before

starting the nephrectomy. After this is done, which at times is very difficult, you can then roll the tumor back, practically bloodlessly if you have secured the veins and artery which is lying right beside it, and the rest of the operation is virtually without blood.

Naturally, this adds to the shock of the operation, but when you consider that you are not trying to get less shock but to prevent metastasis, if possible, this should not be a contraindication. I think this operation should be used in these cases to prevent the scattering of the growth into the veins while you are mobilizing the kidney in the loin.

DR. TOM R. BARRY, Knoxville (closing): I do not agree with Dr. Simons. I think if the operation be transperitoneal it should be transperitoneal, and that we should not make a lumbar incision, for the reason that when you have swept your hand around the pedicle, you have dislodged any malignant cells that may be there. In this type of tumor the metastasis is very late. The growth of the tumor is very rapid, but the metastasis is very light and I think one is unlikely to break off any tumor cells into the circulation.

I thank the gentlemen for their discussion.

CONGENITAL PYLORIC STENOSIS*

J. G. EBLEN, M.D., Lenoir City, Tenn.

UNTIL a few years ago this disease was considered an extremely rare disease and at present may be classed as a rare disease, and possibly should be classed as a disease that often escapes recognition unless physicians are on the lookout, for it is often confused with the ordinary digestive disturbances of babies. Pyloric stenosis, if not recognized early, may often prove dangerous, even fatal, in its results. So it's up to us general practitioners to be on the lookout for such conditions in order to diagnose them early and institute the proper treatment.

There are conditions, however, more or less curable, which though relatively rare, show up at intervals in any doctor's practice, and which stand a good chance to be overlooked temporarily or entirely unless they are kept in mind and looked for in every case with suggestive symptoms.

According to literature, congenital pyloric stenosis was first described about the year 1879. Recent literature on the subject is largely surgical, yet literature on diseases of children is found frequently on the subject of congenital pyloric stenosis. Downs, of New York, has operated on 250 cases, which shows that the condition is not infrequently found when a watch is kept for it. A report in the *Journal of A. M. A.* of July, 1920, shows 163 cases treated by one man in Chicago. Again, I repeat that this condition is not so rare as might be thought, for when we look up the literature on the subject, pyloric stenosis has been variously estimated from a fraction of one per cent up to four per cent of all births.

Pyloric stenosis is more common among

male children than females. About eighty per cent of the reported cases have been in males, and there is no satisfactory explanation for this. The child is very often the first born infant, although there are exceptions to this rule. The fundamental cause of pyloric stenosis is largely theoretical and we find that there is a wide difference of opinion among those who are authority on the subject. None of the early theories has stood the test of time. Some of the more modern theories may be mentioned in this short paper. Deaver and others hold to the idea of hypertrophy as the result of faulty embryonic development which leads to an actual stenosis of the pyloric orifice, a condition which has been demonstrated at operation, the hypertrophy of the muscle in turn being due to the increased effort required to force the food from the stomach into the duodenum; a kind of compensatory hypertrophy. Deaver differentiates the disorder from pylorospasm in that in pylorospasm the hypertrophy is not compensatory, there being no primary stenosis, and that it is due rather to disturbed secretion. These cases respond to regulation of feeding and to medication, while the true hypertrophy does not respond to diet and medication.

Another theory is that the growth of the muscular coat is a rapid one, while that of the peritoneal tube is slow, compared with the general growth of the body, and is capable only of moderate distention. Thus the muscle, as it thickens, presses inward and causes elongation and narrowing of the tube of mucous membrane until the gradual increase in the thickness of the muscle is such that even in a relaxed state it embarrasses the functional opening of the pylorus and produces the characteristic symptoms.

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The development of the hypertrophy being slower in some children than in others accounts for the variation in age at which the obstructive symptoms appear.

Another theory is that the increased muscular and the resulting stenosis is due to overactivity of the muscle begun in intra-uterine life, and that this hypertrophy is due to the swallowing of large quantities of the amniotic fluid. The simple explanation for the condition in infants is a development defect of the sphincter muscle.

There is also an increase in the circular muscle tissue at the pyloric ring which partially or completely occludes it. What is difficult to explain is the appearance of pyloric stenosis after several days or weeks of life, during which time there can have been no obstruction or sign of abnormality, since gains have been regular and normally digested milk stools have been passed. It was for this reason that the theory of pyloric spasm was advanced, which argues that the pylorus for some reason becomes irritable, and through a spasmodic contraction a hypertrophy is developed.

Yet this explanation seems to fail to account for the very definite tumor of a cartilaginous nature which is found in some cases by the surgeon. The findings at post mortem are remarkably uniform. The alimentary canal below the pylorus is perfectly normal. The esophagus is sometimes noticeably dilated, sometimes of normal caliber. The stomach is usually much dilated, the lower border being frequently below the umbilicus. The stomach is usually much thicker toward the pylorus. When looked at from the duodenum the pylorus seems almost closed, the mucous membrane being puckered by the contraction of the hypertrophied muscular wall, not unlike that of the os uteri. No fibrous stricture is present and the whole narrowing seems to be due to compression by hypertrophied muscle. The lumen varies in size. In some instances it barely admits a fine probe.

The onset of symptoms of pyloric sten-

osis in some patients is gradual. In others the symptoms are so abrupt that the child's mother can give an accurate date, often the exact hour, which marks the onset. The essential symptom is vomiting, which usually first occurs immediately after feeding and it makes little difference what the feeding is, whether breast milk or water. In a short time a very definite group of characteristic symptoms appear and the vomiting soon becomes projectile in type. In a certain number of cases the vomiting is projectile and violent from the beginning. It is this projectile type of vomiting which makes the condition easy of recognition, as it is very characteristic and is simulated by few other conditions, especially at this early age. The onset of vomiting generally occurs immediately after feeding or during the feeding, and may be so constant an accompaniment that the child literally starves to death. In these cases it is noted that the child takes the food with great eagerness, indicating his willingness to eat, and thus differentiating the condition from other gastric disturbances.

The vomitus may be clear or it may be bile-stained, depending on whether the obstruction is complete or partial.

The second characteristic symptom is gastric peristalsis. If the baby is carefully observed the gastric wave can be followed from the left hypochondriac region across to the right, disappearing under the right costal border, to return in the reverse direction. These waves may be quite frequent or may appear at rather long intervals, depending somewhat on the gastric tone and the duration of the condition. If the condition has existed any length of time, gastric retention follows.

The vomiting in such cases does not appear immediately after feeding, but occurs intermittently, sometimes not until after the second feeding or hours after the first feeding, when large quantities are vomited. In these cases also the vomitus has the appearance of food which has been delayed in the stomach and is often acid or fermented.

Both the question of obstruction and the size of the stomach can be made out by an x-ray bismuth meal, yet the diagnosis is almost positive with the two above symptoms present, the projectile vomiting or a spurting of the contents of the stomach as some one has said like unto a "squirt gun." With continued vomiting is loss of weight, which at first may be less marked than persistent. As weight decreases peristaltic waves usually recur more frequently and the retention of food increases with the loss of tone of the stomach. The loss in weight then becomes a prominent symptom. There are a great many irritating conditions which may occur in the newborn or infant of a few weeks which will cause a certain amount of vomiting, such as overfeeding, irregular feeding and especially the ingestion of air with the food. None of these, however, will cause typical projectile vomiting, and the loss of weight and characteristics of starvation.

Hess has been able to demonstrate the degree of stenosis by the use of the duodenal catheter, the size of the catheter admitted into the duodenum indicating the degree of hypertrophy. Fluoroscopic examinations is another means of diagnosis, and in this way differentiates between pylorospasm and congenital pyloric stenosis, which is claimed by some to have no connection with each other.

The consensus of opinion today is toward surgical treatment of this condition, although there are a few authorities who think it can be relieved medically. Among these is Haas, of New York. He believes the stenosis to be only an advanced degree of pylorospasm, the manifestation of a general hypertonus due to overaction of vagus portion of the autonomic nervous system, and that the pylorospasm can be controlled by atropin, given with each feeding and given until the desired physiologic effect is obtained. One very objectionable part of this treatment is that it may take not only weeks but months and even a year.

Thomas makes the statement that the

disease is self-limited, in the sense that the pyloric lumen will eventually open up spontaneously and the child recover completely, provided he does not die in the process. Another objection to atropin is that it necessitates such large doses of a powerful drug to be administered to a very young infant. Another important point is that the tolerance for food in these infants who have been starved by the stenotic lesion, has been markedly reduced. One must, therefore, be particularly careful in increasing the diet so as not to overstep the limit of the infant's tolerance.

Advocates of the surgical treatment of this disease have claimed that atropin could only possibly benefit cases of pyloric spasm, but could not possibly be of advantage where true stenosis exists.

No doubt there are some cases of mild pyloric stenosis which will recover under medical treatment, but the severe cases will almost surely die in the process, unless operated upon. Medical treatment is usually tried out for several weeks, consisting of atropin 1/1000 to 1/100 gr. with each feeding and thick gruel feedings. But if there is no response within a reasonable time, and the infant continues to lose weight, surgery should be resorted to. Dr. Murray H. Bass recommends in severe types of the disease to give the atropin by hypodermic injection, and by giving in this way it is known exactly how much the child is retaining.

It is a mistake to believe that pyloric stenosis can be cured with atropin alone. The atropin is merely useful in removing the spasm, which prevents the food from passing out of the stomach, and it becomes necessary to summon to our aid every other possible factor which can help in maintaining the nutrition of the baby. The question of amount of feeding, frequency of feeding and character of food offered must be carefully considered. A trained nurse is most ideal, but an intelligent mother may handle the baby well.

Another method of treatment is the refeeding method. Refeeding means that

the infant, immediately after it has vomited, is given a second feeding of the same food, and if it vomits the second, it is then given a third feeding immediately after having vomited the second feeding, the idea being that the spasm is relieved immediately after the attack of vomiting, and that the food after a second or third feeding may be retained. The thick cereal food has been mentioned and the idea of it is to give a food which is so thick that it cannot be vomited. If it remains in the stomach a sufficiently long time it may be there at a time when the pyloric spasm is temporarily relieved and a portion of it may pass into the duodenum.

To sum up the main ideas of this paper, hypertrophic stenosis of the pylorus belongs to the physician because it is going to come to the physician first, rather than go to the surgeon, and it depends upon the physician's ability to diagnose whether a child's life will be lost or saved by his ability. It is of the greatest importance that every man who does general practice, or who does anything which has to do with children be able to recognize stenosis of the pylorus. The etiology of pyloric stenosis is a mooted question, and those who are considered authority on the subject differ. It is found much more frequently in male children than in female, it is often the first born to the mother. There are mild cases and there are severe cases. Spasms of the pylorus and pyloric stenosis are considered by some as a separate condition, yet it is believed that spasm of the pylorus is a factor and may be the cause of the stenosis.

The diagnosis of pyloric stenosis can usually be made upon three symptoms, namely, projectile vomiting, the peristaltic wave, and loss of weight after the infant should begin to gain in weight. The fluoroscope or x-ray may be an aid to confirm the diagnosis. Medical treatment and other aids may be instituted for a time, but if the infant does not improve, go to or call the surgeon. By a skilled surgeon it is claimed that this operation can be

quickly done and many babies' lives saved. As I do only minor surgery I shall not attempt to take up the surgical phase of this condition.

DISCUSSION.

DR. WILLIAM D. HAGGARD, Nashville: Dr. Eblen has covered this subject so well that there is little to add. Summarizing, one might say that a first born, healthy, lusty, young male baby who, in the first few weeks of life, begins to have vomiting, with marked paroxysms, with perhaps an olive-shaped mass in the right side, would be said to have pyloric stenosis. There are cases which may be tidied over by the skilled pediatrician by means of lavage and other modern methods.

The question is which shall be operated and which shall not? I think the x-ray gives us better information than anything else. If this shows considerable retention of the barium meal, say two-thirds or one-half, that child will not be relieved without operation. That is a point that Dr. Abt has brought out, and they use this sign in Chicago and also in New York, where the point was brought out by Downs. I would like to show you a few slides to illustrate a few points. (Presented lantern slides.)

The point I have insisted upon is to operate upon these patients under local anesthesia. You cannot operate on a hundred babies when general anesthesia is used and get away with it. I learned this accidentally. We used nothing but water in one instance, the novocain, through some mistake, had not been added, and that baby did not cry a bit. I submit that they can all be done under a local anesthetic if they can be done under water infiltration and the child does not cry.

There are two points to be remembered: Do not try to open too widely, for if you do you will get a secondary hemorrhage, and it does not take much bleeding to lose a baby, just a handful. Drop this down (indicating), and close quickly. I use the Ramsted incision and the only objection to it is the danger of going too far on the peritoneum and getting into the duodenum. It is paper thin and great care is necessary. These are the only two danger points that we have, the danger of opening too wide and getting into the duodenum.

DR. J. G. EBLEN, Lenoir City (closing): This is a subject that I think has not had enough attention. I have been attending medical meetings for twenty-five years and do not think I have ever heard a paper on this subject before. The thing that aroused my interest was something that happened last summer. I attended a woman in her second pregnancy. I had attended her in her first confinement and the baby was a girl. The last baby was a boy, and the mother made the diagnosis. She did not know what the trouble was, but I saw the baby many times and told her to give him water, and did not suspect the real condition. The mother called me one day and wanted me to come up and watch the baby vomit, that it was just like a squirt-gun. I watched the vomiting and then I read up on the subject. I tried medical treatment for ten days with atropin and regulated the food and the little fellow began to improve. I think we have all overlooked these cases, and am sure I have overlooked them.

I thank Dr. Haggard for his discussion.

OTITIS MEDIA*

H. E. CHRSTENBERRY, M.D., Knoxville

WE are told, "There is nothing new under the sun," therefore you do not expect anything new in this paper.

In this short paper I wish to review some of the most common and most interesting points which we should consider and have to deal with in this common disease.

Its causes are like Pharaoh's plagues, but I shall only mention some of the most common, viz.:

The predisposing cause is some obstruction in the rhinopharyngeal cavities which interferes with the physiological play of the cilia on the cells lining the walls of the eustachian tubes. This may be local or systemic.

The inciting cause is the invasion of the middle ear cavities of some micro-organism. These micro-organisms are the type usually found in the nose and nasopharynx, which are usually the result of specific infection, such as scarlet fever, measles, diphtheria and influenza.

Various other factors tend to influence and aggravate the purulent process in the middle ear, such as unhygienic conditions, alcoholic excess, neuroses, etc.

The most commonly isolated organisms are: streptococcus pyogenes, streptococcus hemolytic, streptococcus viridens, pneumococcus and staphylococcus. The streptococcus types are the most virulent and destructive to both soft and bony tissues and unfortunately the most frequent.

When the infection enters the eustachian tube the mucus lining swells and closes the tube, the organisms thrive in the exudate produced and this fills up the middle meatus. Pressure on the drum takes place

and unless relieved the exudate takes the path of least resistance and usually infects the mastoid antrum and adjoining cells.

The onset is usually sudden, following so-called colds, influenza or some of the exanthemata previously mentioned.

The patient usually complains of a fullness in the ear and an obstructed feeling in the canal and impaired hearing. His voice sounds louder than usual, he has cracking noises and buzzing in the ear.

Pain usually comes on with the closure of the eustachian tube and the fill-up of pus in the middle meatus.

In children the onset is usually marked by a chill and an elevation in temperature. Pain may be absent in some cases, especially where there has been a hole in the drum, maybe from a previous attack. When present, the pain is steady and boring in type. It is usually worse at night and when the patient is in the recumbent position.

Mastoid pains vary with the character of the bone, which is being dealt with. In the soft pneumatic bone, pain on pressure is usually great, while in the bony type the patient complains of much pain and pressure will not reveal it until later in the course of the disease.

There is another type of pain about the mastoid region, which might mislead us. We get pain on pressure and the patient complains of much distress and yet on examination of the canal and middle ear, there are no symptoms of any true ear involvement. We are dealing with an etalgia and should look to the teeth, tonsils or elsewhere in the body for the foci of infection, and of course in such cases a mastoid operation is unnecessary.

A case with headache and vomiting and

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a history of previous ear discharge should call our attention to the likelihood of an intra-cranial complication, especially meningitis. Pain is one of the early symptoms of brain abscess and we should remember that the site of pain is no guide to the location of the abscess. Occipital pain being present in many cases of temporosphenoidal abscess, while frontal pain is found in cerebellar abscess.

We should be careful in differentiating between psychic and organic pain, which we often have to deal with. The psychic pain is a cortical pain, the impulses are transmitted from the cortex to the periphery, while the organic pain is an optic thalamic pain, the impulses are transmitted from the periphery to the pain center in the optic thalamus.

The psychic pain is usually aggravated by superficial contact, while pressure will not increase the pain, while we have the opposite in organic pain. The pulse rate and blood pressure are usually increased in organic pain when you put pressure over the painful area, but not in psychic pain.

In organic pain there is a dilatation of the pupils. It is absent in psychic pain. Psychic pain does not interfere with sleep, while organic pain does.

I would again call your attention to the fact that pain is by no means a constant symptom in otitis media and when present may be referred to the frontal region, opposite ear or to the posterior cervical region.

Small children may not be able to complain of the pain, but may show symptoms of it by rolling the head or working at their ears. Many a baby has been dosed for the colic and put on various formulas for a correct diet, when its real trouble was an otitis media.

It is the duty of every physician who is doing any practice that has to deal with middle ear infection to prepare and equip himself so that he is able to make a diagnosis of otitis media. If he is not able to do this or does not have the confidence in himself, he should not delay or hesitate

to refer the case to an otologist as an early diagnosis and treatment may mean much to the future welfare of the patient.

The physician should at all times when treating a child make a careful examination of its ears. The importance of an early diagnosis cannot be emphasized too much and the early opening of the drum and establishment of drainage is most important, as this in many cases will prevent serious and prolonged inflammatory process with their attending dangers.

That otitis media cannot be definitely diagnosed except by a careful inspection of the drum membrane, is evident to all who have followed these cases, especially in children.

The diagnosis being made it is then our duty to put forth our best effort to hasten and perfect a cure.

First the cause should be removed as soon as possible and drainage and ventilation established; through the eustachian tube if it can be without traumatism and too much pain. There cannot be much defense for making an unnatural drainage of the middle ear through the drum and neglecting to attempt the establishment of the natural drainage through the eustachian tube. This can sometimes be done by removing obstructing causes and medication applied to the membranes around the mouth of the tube or through the eustachian catheter. If there is any symptom of bulging or fullness of the drum membrane, it is very important to do a myringotomy early for the purpose of relieving the pressure and establishing good drainage. This should be done under good illumination and anesthesia, either local or gas. It has been my experience that sufficient anesthesia can be had by applying to the drum a triple anesthetic made up of equal parts of cocaine, menthol and phenol. This can be easily applied on a small amount of cotton on a toothpick and placed on the drum; allow to remain a few minutes and repeat, then the drum can be incised with very little pain to the patient.

The amount and location of the bulging,

if carefully observed, is worth much in the prognosis as to the course and recovery of the case. Where we have drooping of the superior posterior wall of the external canal, we invariably have a mastoid involvement and it takes much longer for the case to get well.

The general physical condition of the patient is very important and should be carefully looked after as to hygienic surroundings, diet, elimination and supportive treatment.

I prefer careful irrigation of a hot sodium bicarbonate solution, often enough to keep the drainage from damming up the canal, and the instillation of such medication as indicated by the stage, nature and character of the disease.

In the acute stage, where there is much pain, six or eight drops of a solution of phenol, camphorated tincture of opium and glycerine heated and dropped in the ear every twenty or thirty minutes with heat applied externally, will usually relieve the pain. The electric pad is the most satisfactory way of keeping heat to the ear; of course where this is not practical, the hot water bottle or other means of heat will have to do.

Where there is no pain and drainage has been established, the instillation of a five per cent solution of mercurchrome, a 1 to 500 to 1 to 1000 solution of metophen, a twenty-five to forty per cent solution of argyrol can be used with very satisfactory results. As to which of these I use depends upon the character of the disease, amount of drainage and the progress of the disease.

Some few cases will yield more readily to dry treatment. The exception are up to the better judgment of the physician in charge. I contend that the majority of these cases can be cured without serious mastoid involvement if properly and carefully treated. It is the duty of every physician to give these cases careful consideration and treatment and not pass them up. Too often we see cases of chronic purulent otitis media which have run for

years, that no doubt would have been quite different had they been properly treated in time.

My purpose in presenting this paper was not to try to present anything new, for we all have our own methods of treatment which we think are the best, as they have no doubt given satisfactory results in our hands, but it is my desire to insist on all physicians making an early diagnosis and instituting treatment in time to prevent complications and preserve the hearing of the patient. There are too many people whose usefulness is impaired by deafness when it could have been different. Let us see to it that such an indictment can never be brought against any of this society.

DISCUSSION

DR. W. T. de SAUTELLE, Knoxville: I could not attempt to discuss this paper from the standpoint of the otologist, but I can say that it seems to me that some of the general practitioners and even the pediatricians do not watch the ears as carefully as they should. I make this statement because about a week or ten days ago I had an autopsy on a child, and on taking out the brain I noticed considerable infiltration over the petrous portion on each side. You may know that I was much surprised to see thick, yellow pus ooze up over the piece of chipped bone. Going over the history it was evident that the man in charge of the case had not looked into the ears carefully. One had been punctured, not sufficiently, and the other had not been opened at all. They did not even know that otitis media was present.

I believe the ears should be looked after very carefully and thorough drainage established. When pus will ooze up through the petrous portion it is evident that the drainage has been very inefficient.

DR. H. E. CHRISTENBERRY, Knoxville (closing): I am sure you all see these cases. Of course, they may not be a puzzle to anyone, but we find many of them over in East Tennessee in which the patient comes in and gives a history of having had a chronic discharge from the ear, they call it "bealed ears," and whether they wrongly accuse the doctors or not, I do not know, but they say the doctors told them "It does not amount to anything." We know that no doctor today should make such a statement to a patient. Those of us who were connected with the draft boards know that one thing that absolutely turned a man down was a chronic discharging ear. At first they were refused if they did not have sufficient teeth, but then those boys

were called back, and if the teeth could be put in shape they were taken into the army, but if they had a chronic discharging otitis media they were turned down absolutely. In many cases after they got on to that fact they poked nails and things into the ear, and while some did not rupture the membrane, they had the canal in bad condition. These patients are all very apt to have meningitis and other serious complications, the odor is offensive, but many of them can be cured if they are treated properly. They should not be passed by too lightly.

I do not know whether you all open the ear-drum or not, but I see many an ear-drum that has had a paracentesis. I think that does not go far enough and that it is now obsolete so far as its effect is concerned. We should do a myringotomy—make a good circular incision, far enough up and to the floor to get free drainage. If you make a puncture in the drum anywhere

above the floor the ear has to fill to that point before it can overflow, and in the cases where the drum has already ruptured it is usually above the equator of the drum and they are very difficult to heal. But even in those cases you can go in and make a good semicircular incision, secure proper drainage and get much better healing.

The other day someone said to me there was a new instrument with a rather triangular sharp point, rather a V-shaped affair. I cannot see where that instrument is of any practical aid at all, and I do not know why such an instrument should be on the market when we can take an old cataract knife and get a good incision, which is what we want and not just a stab puncture. The thing is to open in time and give good drainage, and we will not have to do one-fourth the mastoidectomies that we have been doing.

TIC DOULOUREUX*

C. S. McMURRAY, M.D., Nashville

NATURALLY the first question to the uninitiated is, "What is tic douloureux?"

Tic is a term used to describe any spasmodic movement or twitching of any muscle or groups of muscles. Tic does not, therefore, limit itself to the facial muscles, contrary to popular belief. Neither does it limit itself to sensory nerve or painful convulsive seizure.

As example, convulsive tic of the seventh cranial nerve, diaphragmatic, mimic or laryngeal tic, all of which are motor nerve involvements and are painless.

Tic douloureux refers to a painful spasm of those muscles whose sensory nerve fibers are supplied by the fifth cranial nerve. The spasm in this instance is not primary, but is secondary, and is an effort on the part of nature to put these sensory nerve endings at rest, to protect them from irritation due to a neuralgia of the fifth nerve.

Remember, I refer to those muscles whose sensory nerve fibers are supplied by the fifth cranial nerve. The motor nerve fibers supplying these same muscles may get their origin from the third, fourth, fifth, sixth or seventh cranial nerves.

Whereas the great classification of tics refer apparently to primary motor disturbances and tic douloureux is primarily a sensory disturbance, I feel that the name tic is misleading.

Trigeminal or fifth cranial nerve neuralgia is probably the more appropriate term.

The next thing that occurs to me is, "Is this condition a disease, a part of a complex, or a symptom within itself?"

When we find a neuralgic condition of any other nerve or group of nerves we

at once begin to look for the cause.

The causes as a rule are found to be, first, either toxic, from some localized foci of infection, or blood borne chemicals or foreign proteins, or excess glucose in the blood, and unfortunately many times there is some metabolic disturbance the exact nature of which we are unable to determine, but which nevertheless is causing an irritation of sensory nerves and thereby giving us neuralgic or rheumatic pains.

Then, second, there are the pressure neuralgias, which are the cause of many referred peripheral pains, and which are the cause of many mistaken diagnoses.

Third, the local disturbances in sensory nerve trunks due to trauma, heat, cold or other changes.

Fourth, and last, we have the primary degenerative changes within the nerve fibers themselves.

The fifth nerve, being largely a sensory nerve, can have any of these causes behind a neuralgia within itself.

I am inclined to feel, therefore, that tic douloureux is a symptom or symptom complex rather than a primary disease.

Yet there are several features about the fifth cranial nerve which make it different from any other sensory nerve in the body.

In order to understand this the anatomical origin, structure, relations and distributions must be thoroughly understood. To completely give an accurate and detailed anatomical review of this nerve would not only require the services of an expert anatomist, but it would also take many pages and much time.

I will, therefore, only mention a few of the more important features.

The fifth nerve comes off the pons at about its middle and lateral part. It comes off here in two roots, a small part which is

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the motor portion of the nerve and a larger or sensory portion. These are in reality two separate and distinct nerves at origin from the pons. The fifth nerve has a more extensive connection with the brain and spinal cord than any other of the cranial nerves, its roots running from the mesencephalon above to the second cervical below.

These two roots go forward over the petrous portion of the temporal bone and here the larger or sensory root broadens out into the semilunar ganglion, more commonly known as the gasserian ganglion.

We recall that a ganglion is a group of gray matter or brain cells which are grouped outside of the spinal cord or brain and which receives impulses or stimuli from the peripheral nerve endings in the skin and tissues and relays these stimuli to the cerebrum, while at the same time it sends the stimuli to a motor center for reflex action.

From the semilunar ganglion the nerve immediately divides into three branches. The first or ophthalmic, second or superior maxillary, and third or inferior maxillary, or by some called the mandibular branch.

The motor root runs parallel with and inferior to the ganglion. After division of the fibers distal to the ganglion into the three separate branches, the motor root joins with the third branch or mandibular nerve.

The first division or ophthalmic nerve passes along the lateral wall of the cavernous sinus and enters the orbit through the superior orbital fissure, where it divides into its several branches to supply the orbital cavity, its adnexa, the nasal walls and roof.

Through the ciliary ganglion the nasociliary nerve makes connection with the oculo-motor nerve and the sympathetic nerve.

The superior maxillary branch is the one in which tic douloureux usually starts with its first symptoms. This branch, leaving the semilunar ganglion, passes along the inferior wall of the cavernous sinus and leaves the skull through the foramen ro-

tundum of the sphenoid bone. Here it traverses the pterygo-palatine fossa for one-quarter of an inch and passes through the inferior orbital fissure and groove to enter the infra-orbital canal, after which it appears on the face through the infra-orbital foramen.

We will call attention here to the very thin lamina of bone which separates the maxillary sinus or antrum from the nerve trunk at this point. Further, some anatomists have demonstrated that occasionally this thin lamina is absent and the nerve courses through this are covered only by the serous lining of the antrum.

Further, the maxillary branch gives off a meningeal branch to supply the dura mater of the middle fossa of the skull.

Branches are given off in the sphenopalatine fossa to the sphenopalatine ganglia found at this point and another branch which supplies the upper molars. In the infra-orbital canal two more branches are given off which supply the remaining upper teeth.

Through the sphenopalatine ganglion connection is again made with the sympathetic system. Branches from this ganglion supply the palate, lower portions of the nose and naso-pharynx.

The mandibular branch, being both motor and sensory, leaves the base of the skull through the foramen ovale entering the infra-temporal fossa. Here an anterior branch goes to supply the muscles of mastication with motor fibers as well as sensory.

The posterior and larger branch gives off two terminal branches. The N lingualis, which supplies the tongue, sub-lingual and sub-maxillary regions.

The inferior alveolar branch runs downward and outward beneath the lower border of the external pterygid muscle to enter the mandibular canal through the posterior mandibular foramen. While passing through this foramen all of the lower teeth are supplied by trophic and sensory fibers.

We will again call attention to the ganglion connections with this division of the

fifth nerve. The sub-maxillary ganglion is placed on the hyoglossus muscle between the lingual nerve and the sub-maxillary duct.

The optic ganglion is medial to the mandibular nerve, just below the foramen ovale. Here again we have sympathetic nerve attachments.

Besides these connections there are very evidently minute connections between the fifth and seventh or facial nerve so as to carry sensory fibers to the facial muscles.

I have hit the high points in going over the anatomical relations of the fifth cranial nerve in order to demonstrate:

First, that we have a very complex nerve with which to deal.

Second, that through ganglion connections as well as directly, it is joined to and its functions are intimately associated with nearly all of the motor cranial nerves as well as the sympathetic system.

Third, to show that it is *the* sensory nerve that has more varied work to do than any other sensory nerve of the organism. It supplies sensation to the eye which is probably the most used and abused organ of the body. The middle branch supplies the maxillary sinus and upper teeth and the mandibular branch the lower teeth. All of these terminations are subject to frequent infections and irritations.

The mucus membrane about the nose and mouth are subjected to frequent infections and irritations due to chemicals, gases and temperature changes. There is not a time that some branch of the fifth nerve is not called on to receive and transmit stimuli of varied types.

Fourth, the middle branch runs for about an inch alongside of the maxillary sinus and anomalies are found where it runs directly along under the serous lining at this point, thereby subjecting it to direct invasion by infection.

We recall that at first attention was directed to the causes of neuralgias in general and that infections stood at the head of the list, followed by blood borne toxic agents and trauma, or pressure disturb-

ances. Here in the fifth cranial nerve we have the ideal situation for any of these causes to act.

In my experience I have had occasion to see a number of classical cases of tic douloureux. I have seen others who had been diagnosed as tic douloureux, but who proved to get relief from their neuralgia on getting an antrum drained or teeth pulled or a frontal sinus drained. In the past few months I have seen one case that has improved on treatment for a chronic tertian malaria.

In order to properly classify the fifth nerve neuralgias I tried to get some information on the pathology of the nerve and semilunar ganglion in these conditions.

I can only report what Delafield Prudden has to say: "Changes in the peripheral branches of the fifth cranial nerve removed from obstinate cases of trifacial neuralgia have been reported in a considerable number of cases. These changes consist in degeneration of the axis cylinders and their medullary sheaths. In a smaller number of instances changes have been reported in gasserian ganglion removed from such cases. These changes consist in atrophy and disappearance of the nerve cell with increase in connective tissue elements. A peculiar shrunken condition of the cell in which the cell retracts to one side of its cell is a fairly characteristic feature."

This report indicated that the majority of cases have nerve degeneration distal to the ganglia and in only a few cases have actual changes been found in the ganglia itself. We must remember, however, that nerve tissue will show post-mortem changes very readily and the above reported pathology may not all be due to primary changes in the nerve prior to section.

This brings me to a classification of tic douloureux into three groups:

1. Early or beginning in which a neuralgia of a particular or single branch is complained as example in the infra-orbital.

2. Moderately advanced in which prac-

tically the whole of one of the three main divisions is giving symptoms.

3. Far advanced, or true tic douloureux, where the gasserian ganglion is involved and shooting pains may appear in any one of or all of the branches.

The rhinologists I believe will agree with me that they occasionally see an acute type of fifth C. N. tic accompanying acute antral infections and which is temporary, being relieved as soon as the acute infection subsides.

Then there is the pressure type as I saw in a patient complaining of infra-orbital tic. She got permanent relief after extraction of a very deeply seated upper third molar which was evidently pressing on the posterior superior alveolar nerve. Yet she was getting symptoms over the whole of the terminal branches of the second division.

SYMPTOMS

The chief symptom of tic douloureux is pain over some part or area supplied by the fifth cranial nerve, usually unilateral.

This pain will vary. The first intimation that some patients have is a sudden violent attack of sharp or lancinating pain lasting from a few seconds or minutes to several hours. In the majority, however, they first complain of a certain definite spot of hyperesthesia or of a burning sensation on the cheek. This spot may be only the size of a pin point. After several weeks the area seems to spread and a definite sharp pain will shoot through this area. About this time the secondary spasm starts in the facial muscles whose sensory nerve fibers are supplied by this branch involved.

Very soon after this the patient will go into the typical paroxysmal type of pain which is characteristic only of true tic. They at first cry out with it, but soon learn that by so doing their pain is made worse. The result is that the old tic douloureux patient gets quiet and still when the paroxysm comes on, he realizing that this will allow the spasm to go off sooner.

This also accounts in part for the mask-like expression on the faces of these patients. They learn to control the facial muscles, as only a slight motion might bring on an attack which is continuously dreaded.

The general health is usually good, though after prolonged attacks in which relief is not obtained, they may show loss of weight. This is obviously caused by their inability to properly masticate their food.

Tic douloureux may come on in middle life, though usually it is found in persons past fifty years of age. A good percentage of them have arteriosclerotic changes in the blood vascular system.

Women are more prone to be attacked than men. Heredity apparently is not considered in its etiology.

The diagnosis of tic douloureux is made by the presence of pain as described above after a careful general examination has not revealed a specific or direct cause for it.

In other words, sinuses, nose, eyes, ears and throat should be gone over and eliminated both by clinical and roentgenological examinations. A competent dentist should be called in to x-ray and otherwise examine the teeth. The patient should have a general physical examination. Then any pathology found that might be causing this neuralgia should be corrected as far as possible.

If we can possibly find the point of irritation or pressure and relieve it or find the foci at the roots of teeth and remove them early before degenerative changes have set in along the nerve trunk to the ganglia, I feel that we can prevent as well as cut short many cases of tic douloureux of the first grade. This applies of course to the many other points of infection about the sinuses as well.

The blood borne infectious toxemias should be looked for and foci removed. This, of course, applies to tonsils, gall-bladder, intestinal toxemias, etc.

The treatment, therefore, should be preventive in the first place, and an attempt

to stop further nerve changes in the second place.

Once we have gotten a true tic douloureux of the second and third grades with ganglion changes I doubt that ordinary therapy as removal of foci will give relief.

It is here that surgery has had to step in and attempt to give relief. Surgery in connection with the fifth cranial nerve should be resorted to only after a careful examination of the patient and a diagnosis of tic douloureux has been arrived at by elimination.

Why? Because it necessarily means a certain amount of facial deformity due to resultant trophic changes when the fifth nerve has been severed or put out of commission as a result of some surgical measure.

The first step for surgical relief should be the alcoholic injection into the body of one or more of the terminal branches involved. Many times in the first and second groups of cases this alone will give satisfactory relief for a period of a few months or one or two years. The length of time between seizures will vary according to:

First, whether this injection had gotten well above the pathological area in the branch involved.

Second, whether the alcohol has been injected into or around the nerve.

Obviously an injection directly into the nerve will give a more complete destruction of nerve tissue than if it is only injected in the tissues around.

For this reason it is best to inject these patients with no anesthetic so that you can be sure when your needle enters the nerve sheath. When the nerve is punctured, the patient will get pain over the peripheral area supplied by these nerve fibers.

The sites of these minor injections or superficial injections is at the supra and infra-orbital and mental foramen, depending on the area involved.

Many times this will allow use of these facial muscles involved without bringing on the severe paroxysmal attacks and thereby give great relief even when the pathology has extended higher than the injection. Here, however, the patient will not have been completely relieved of pain.

Where deeper injections are required the mandibular branch can be easily reached either extra or intraorally. The technique for this nerve is the same as for injection of the gasserian ganglion at the foramen ovale, with the exception that in the latter the needle is introduced into the foramen, while in the former the injection is made as soon as the mandibular nerve is reached.

The maxillary division can be reached and injected where it passes through the pterygo-palative fossa.

The ophthalmic division can be reached only by injection through the orbital cavity and is a more difficult procedure. When the ophthalmic branch is involved, however, injection of the gasserian ganglion through the foramen ovale is usually the procedure of choice.

Before injecting alcohol into any one of these branches it is always well to know that the needle is in the nerve sheath. This is indicated by pain over the peripheral area supplied by this nerve. A further test, however, is the injection of one to three drops of four per cent novocain. This will immediately anesthetize the peripheral area. Then you are doubly sure of being in the nerve sheath. Now one cc. of eighty per cent or 90 per cent alcohol is slowly injected.

The alcohol destroys the nerve fibers temporarily, but unfortunately in a few months regeneration takes place and another injection is required.

Alcoholic injections should be tried and used several times on the gasserian ganglion before resection or division of the ganglion should be resorted to.

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J. F. GALLAGHER, M.D. -----Editor

R. C. DERIVAUX, M.D. -----Associate Editor

MARCH, 1926

EDITORIAL

ON THE DISCUSSION OF PAPERS

Blessed is he who having nothing to say, abstains from giving wordy evidence of the fact.

On the occasion of a recent medical meeting, of which there are no end it would seem, a member arose during the discussion of a paper and announced he knew nothing of the subject under discussion and then proceeded to talk at length. Everyone knew that he knew nothing of the subject even before he announced the fact; and to everyone who did not know it, he proceeded to demonstrate it in endless verbosity. It was then that a member wrote the above quotation on a prescription blank and passed it to the writer.

Aside from the appropriateness of the epigram to the occasion it gave food for thought on the question of discussions of papers in medical societies in general. "All generalities are not true, not even this one," some one has said, but it may be ventured as a fact that the better the society the shorter the discussion—that is, the individual discussion.

It is interesting to speculate on the types of men attending medical meetings in regard to the discussion of papers. There is the type who rarely if ever discusses a paper. He may attend attentively and never take the floor. He is eager to learn, and it not infrequently happens that he is more familiar with the subject than many of his more active confreres. He sits in calm judgment

evaluating the remarks of the speakers, comparing the ideas, experiences and opinions of others with his and profiting thereby. It is not egotism that prompts this attitude, but modesty—a false and unfair modesty. This man is doing the society and himself an injustice.

Then there is the silent critic. He never takes the floor, but indulges in disparaging remarks concerning the topic under discussion, or the speaker himself, to those with whom he is in contact. One of the outstanding traits of this type is that he is the first to move to adjourn, and this on the slightest provocation.

And then there is the verbose and prolific one who attempts to discuss everything and everybody. Often of ponderous voice and solemn mein, he speaks of irrelevant things, or he reiterates with the finality of originality and learning the very topics which had been carefully covered in the paper. This is the one that is a menace to a society. And thus it may be repeated that the better a society the shorter the discussions.

Proper, well-timed discussion is the very life of the scientific assembly of any medical society. Without it the meeting falls flat. But what cannot be said that should be said by one discussing a paper in five minutes? Without discussion a meeting palls but, on the other hand, let it be remembered that one can be talked to death.

DEATHS

Dr. Andrew J. McClarney of Crossville, aged 27, died March 12th. Dr. McClarney was a graduate of the Chattanooga Medical College in the class of 1909.

Dr. G. K. Waits of Minor Hill, aged 46, died March 13th. Dr. Waits was a graduate of the Memphis Hospital Medical College in the class of 1912, and was a member of the Giles County Medical Society at the time of his death.

Dr. Walter S. Dodson of Labanon, aged 47, died March 13th of cerebral hemorrhage. Dr. Dodson was a graduate of the University of Nashville, Medical Department in the class of 1901, and was a member of the Wilson County Medical Society at the time of his death.

Dr. William C. Looney of Normandy, aged 69, died March 31st. Dr. Looney was for many years head of the Emerald-Hodgson Hospital at Sewanee, but five years ago moved to Normandy. He was a graduate of the University of the South, Medical Department, Sewanee, in the class of 1900.

IN MEMORIAM

WILLIAM MILLER ORR

Born near Shelbyville, Tenn., November 6, 1856, he began the study of medicine under Dr. R. F. Evans of Shelbyville in 1877, later attending the medical schools at the University of Nashville, and Vanderbilt University, where he was graduated in 1882.

He practiced medicine in Bedford and Rutherford Counties from 1882 until 1920. After several months in New Mexico, he came to Chattanooga in 1920, making his residence here until his death, March 8, 1926.

Though never active in the practice of medicine in Chattanooga, Dr. Orr was an interested and constant attendant at the meetings of the Chattanooga and Hamilton County Medical Society.

WHEREAS, The Chattanooga and Hamilton County Medical Society has lost a valuable member and pleasant companion in the passing of Dr. Orr; be it

Resolved, That we desire to express to his family and friends our sorrow in his death. The community has lost a good citizen, his patients a friend, the church a consistent worker, the poor a helping hand. May the mercy of the Heavenly Father console them in this time of their bereavement. Be it further

Resolved, That a copy of these resolutions be spread upon the minutes of this

society, a copy be sent the family of the deceased and a copy be furnished the Journal of the Tennessee State Medical Association.

(Signed)

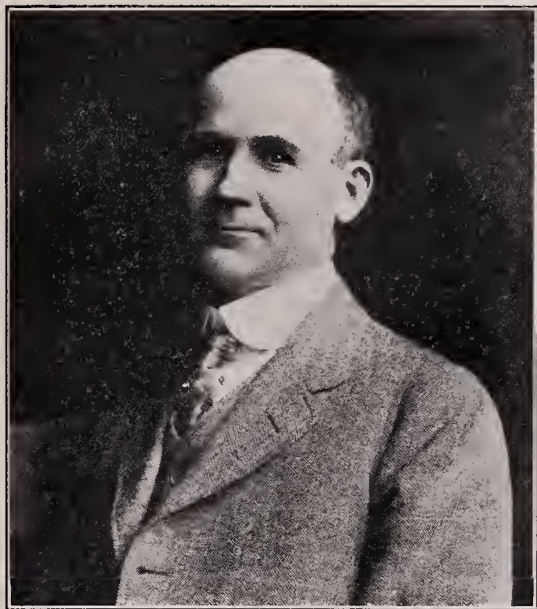
FRANK TRESTER SMITH, M. D.
J. W. MACQUILLIAN, M. D.
W. J. WINTER, M. D.

A HISTORY; A TRIBUTE

W. BRITT BURNS, M.D., Memphis

DR. FRANK DAVID SMYTHE was born in Kosciusko, Attalla county, Mississippi, March 10, 1867. He died 1, 1926.

Many of Dr. Smythe's antecedents, on both sides of the house, have been physicians for generations. His uncle, Dr. Gordon Smythe, was the the first man to administer chloroform as an anaesthetic in the state of Mississippi.



DR. FRANK DAVID SMYTHE

Dr. Smythe was one of ten children—five brothers and four sisters. Three of his brothers are physicians, one a lawyer; the other died while studying dentistry at Vanderbilt University. One of his sisters married a physician.

Dr. Smythe's early education was ob-

tained at the public school in the town in which he was born. At the age of eighteen, after having finished the course at the academy conducted by Prof. John F. Edmunds, a prominent educator of that period he went to Texas, engaged in the drug business and began the study of medicine under his namesake and owner of the drug store and a practicing physician in Bryan, Texas. He soon became a qualified prescription clerk, and after a period of two years he matriculated at the Tulane University for the purpose of prosecuting the study of medicine. He was well informed on the subject of *Materia Medica* and Pharmacology at the time of his matriculation.

At the end of his second year he was awarded the position of interne or resident student and ambulance surgeon of Charity Hospital by competitive examination.

After having graduated April 1, 1891, he engaged in the practice of medicine at his old home in partnership with Dr. E. C. Coleman, who was the leading physician in Kosciusko at that time. His taste for surgery was early developed under the tutorship of Dr. Rudolph Matas, one of the South's great surgeons. Dr. Matas was his ideal and from him he was inspired to prosecute the study of surgery and to take advantage of the great opportunities afforded by the Charity Hospital. Therefore upon the taking up of the studies of his profession he was ready and unusually well prepared to prosecute the art of surgery.

There had been only one abdominal section performed on a patient in Attala county at that time, and that was done at the Charity Hospital in New Orleans. He was unable to get any of the physicians practicing at Kosciusko, with the exception of his associate, to assist in the performance of an abdominal operation for the reason that they did not care to be criticised by the public for being present and participating in an operation that would, as it appeared to them, most certainly end in death for the patient.

In Kosciusko he was a member of the town council and head of the Health De-

partment. He was a member of the State Board of Health of Mississippi and of the State Board of Examiners. His knowledge of surgical conditions and his skill in the art and his reputation withal grew apace. In 1896 Dr. Smythe was chosen by Dr. W. B. Rogers to become his associate. He removed to Memphis and took up the practice of medicine and surgery in November of that year. Dr. Smythe immediately became connected with the Memphis Hospital Medical College, now the University of Tennessee, in the capacity of quizmaster on Anatomy and Surgery. He organized the department of operative surgery upon the cadaver the following year and was placed by the faculty at its head. It was, I believe, the first of its kind to be added to the curriculum of any of the medical colleges then in the South. He remained in charge of this department, demonstrating the various operations upon the cadaver for two hours a day for a period of three years, and then was chosen to fill the chair of *Materia Medica* and Therapeutics and lecturer on clinical surgery. After three years' teaching in those branches he was selected to fill a vacancy in the chair of Gynecology.

He remained at the head of the Department of Gynecology until a few years after the merger of the various colleges now constituting the University of Tennessee Medical College. It will be seen in passing that Dr. Smythe was an accomplished internist as well as a finished surgeon.

Immediately following the declaration of war by the United States against Germany, Dr. Smythe offered his services to his country. He received a commission as a Major in the Medical Reserve Corps. He served as examiner of medical men who sought commission to the medical department of the United States Army.

Dr. Smythe's impelling enthusiasm and gripping spirit constrained men to rally to the colors of their country. He carried the challenge to the entire Memphis territory and medical men responded in such numbers that his station lead all the cities in

the United States in percentage of commissioned medical officers.

Under the direction of the Surgeon General, he organized Base Hospital No. 57 for service in France, and in due season went with his unit overseas. While in Washington pursuant to the completion of the organization of this unit, he and Mrs. Smythe were entertained by Surgeon General and Mrs. Gorgas and Major General and Mrs. Nobel and it was on this occasion that Mrs. Gorgas personally presented the "Marie Gorgas" ambulance to Dr. Smythe for the services of the hospital in France.

Dr. Smythe's indomitable energy and his love of and loyalty to the art and practice of surgery was of such an urge as to drive him to forego the command of his unit for the better part of touching those who are sick, those who suffer, those who are wounded—and those who die.

"Oh! Sympathy, great that human hearts bind."

Dr. Smythe about this time reached the rank of Lieutenant-Colonel and went overseas as Chief Surgeon of his unit. His unit took charge of Red Cross Hospital No. 7, at Juille, forty kilometers from Paris. After September 15, 1918, the organization was ordered into Paris and converted Lycee Montagne, a boys' prep school of the University of Paris into a hospital. Dr. Smythe returned to America about the first of January, 1919, and was discharged from the service January 8th. He re-entered private practice and was thus actively engaged up to March 16, 1923. He served as a member of the surgical staff in practically all of the hospitals in Memphis for the past nearly thirty years. He was chief of the staff in some of the hospitals and was a member of the Gynecological staff of the Methodist Hospital and of the Baptist Hospital. Much of his time had been devoted as a teacher of medicine and as a teacher of nurses, notwithstanding that he was heavily taxed with a surgical practice of great magnitude.

Dr. Smythe all of his professional life took an active part in behalf of organized medicine and was conspicuous in exerting

himself to the utmost of his capacity in behalf of all measures promoting its uplift. To those who were familiar with the enormous volume of his work for the past quarter of a century, it was a marvel that he had the time and the disposition to perform all kinds of committee work in his county society and in civic affairs. He was a positive character and upon every proposition at all familiar to him he was found definitely upon one or the other side, usually the right side, surely upon the side which he thought was right.

He was among the first to inveigh against those who would commercialize the practice of medicine. And he raised his voice, in season and out of season, against the fee splitter and the medical man with a press agent. He religiously fought pretenders and shams in the profession and aggressively condemned cults, fakirs and fanatics without.

In 1909 Dr. Smythe contributed an epoch-making address to the profession upon "The Duties and Responsibilities of the Surgeon and Some of the Things the Public Has a Right to Expect of Those Assuming to do Surgery." The address urged the adoption of a scheme whereby the public could and would be protected against many who were undertaking to perform surgical operations of election without sufficient experience and proper preparation. The tenor of the whole address reads much like a tenet of the American College of Surgeons, an institution organized four years later to promulgate and establish a "Minimum Standard" for and in the practice of surgery.

Dr. Smythe was a voluminous writer upon the subjects of surgery and gynecology. All of the important phases of surgery and gynecology were learnedly and accurately discussed and the subject matter of his contributions was fully abreast and often far in advance of the times.

Dr. Smythe was repeatedly urged to write a book on the subject of abdominal surgery or gynecology. That work, however, he never undertook.

His writings bore the stamp of origi-

uality. He did not resort to much quotation and bibliography. His great clinical work and experience made it unnecessary. He was a successful teacher of medicine and surgery of students in the class room and of the graduate physician in the forum.

He was honored by his fellows as few men have been. He was elected to the presidency of the West Tennessee Medical Association in 1909. President of the staff, St. Joseph's Hospital, 1920-21; president of the Memphis Chapter of the American College of Surgeons in 1923 and re-elected in 1924-25-26. President of the Tennessee State Medical Association for 1924-25. In all of these he served with wisdom, dignity and distinction. The writer, who knew him well and loved him, does not hesitate to aver that he was entitled to and fitted for these offices by every good attribute of mind and soul.

Dr. Smythe was a loyal and devoted friend, generous to a fault. He gave unsparingly of his substance for those in need. He was the sustaining hand that steadied faltering ones in the struggle for daily sustenance and a better place in life. He was an indulgent father and a devoted husband. His home relations were fine and sweet.

He was married in his early manhood to Miss Sally Agnes Ward, daughter of the late Dr. Benjamin N. Ward. As a result of this union was born Dr. Frank Ward Smythe, his associate in the practice of surgery, Mrs. Carolyn Smythe Parks and Mrs. Sara Ruth Graham. To his children he gave every advantage, and they today are enjoying the fruits resulting from the provisions made for their welfare and for the valuable lessons he taught them in their youth.

After the death of his first wife he married Miss Beulah Mynders, daughter of the late Professor and Mrs. Seyomur Mynders, and unto them was born a son, David Mynders Smythe. Her death occurred during the great epidemic of influenza in 1918, while Dr. Smythe was in active service in France.

Dr. Smythe never shirked a responsi-

bility. Out of this kind of spirit, coupled with an indomitable energy, grew a great opportunity for service. He ever met the challenge. He cured the sufferings of those who suffered, sustained those who had need of sustenance and was a friend of those in need of a friend.

He was a man of acute intellection and likewise of quick determination. When, therefore, a sick man with a surgical problem came into his care, his mind was soon made up and he was ready, *right then*, to resort to the surgical measures necessary for the relief of the condition.

As an example of the foregoing statement it is of interest to mention the case of a man who was being wheeled into St. Joseph's Hospital, some twenty-five years ago, who was apparently choking to death. Dr. Smythe's attention was called to the man, and without a moment's hesitation, he whipped out his pocket knife and opened the man's trachea, permitting him to breathe. After which he sent the patient to the operating room for the purpose of securing him against infection. The patient lived several years after the happening and may yet be living.

While Dr. Smythe was a man of pronounced views, opinions and practices, he was often amenable to intelligent suggestion. More than once the writer remembers to have seen him graciously accept, what appeared to be a timely suggestion, during the process of some tedious operation. And again deferring some step of an operation to the method of some one of his observers or auditors.

For years the moments in the "washup" room was a veritable post-graduate school for medical men in the Memphis territory, who came in so frequently to see Dr. Smythe operate. Such moments were quite as valuable as those spent in his operating room.

Never a robust man, yet he for years did the work of many men. He was a veritable human dynamo. He suffered with pyorrhea all of his life, and was many times infected while operating in pus cases. He was sick with influenza before going to Ft.

Ogelthorpe early in 1918 and again while serving his county in France. This with the loss of his beloved wife, about the same time, plus the strain of the army life, bore heavily upon him.

For four years, following his return from overseas, he was apparently well and all of his professional relations were re-established. His large clientele and his legion of friends came back to him. He was extremely happy withal.

On March 16, 1923, he was seized again with influenza and its ravages were fatal. The working tools of his order were laid down, never to be taken up again. Ah! Yes, he was driven by his indomitable courage, on occasions, to carry on, but the evil shadow of doom had eclipsed his strength. He could but stand by and "await the inevitable hour."

His months of illness, of course, circumscribed his touch with the world, as it passed heedlessly on; but in so far as his mind and will could command, he brought all things to himself. His mind never functioned with greater effulgence. His enforced seclusion permitted him to study and think over questions which his hitherto busy career had not vouchsafed to him. He was led to the belief that his beloved profession was being prostituted by commercial and syndicate methods and that time honored prerogatives were being unfairly wrung from those amongst his brethren who would "travel alone." No sooner did he find himself in this new sphere than "he began both to do and to teach." All day long and frequently far into the night did he occupy himself—in conference, by letter, by telephone and by ambassador in the work, a labor of love, for what appeared to him, to be his imperative duty, for the betterment of the practitioner of medicine. Thus he wrought. Each succeeding month and year holding for him a larger and more important program than the preceding month and year. And when the final summons came and the sable angel stilled his throbbing, tumultuous heart, he had set his horoscope for an even greater evangelism for the year to come.

His hours of seclusion were hours of meditation and his meditations softened and sweetened his life. He was walking and talking with his God now. Though long a professed believer, he was not quite secure in his mind about our Lord's plan of salvation. As was a habit of his life, he sought the truth, and he read: "And ye shall know the truth and the truth shall make you free." If the Son therefore shall make you free, ye shall be free indeed." After many hours and days of thought and prayer, he conceived it to be his duty to be immersed, thus symbolizing the death, burial and resurrection of his Lord; believing that this act typified scriptural baptism.. All other scriptural injunctions he had kept from his youth. Accordingly early in 1925 he was immersed. He would not withhold any good thing from his friends and he straightway went about telling all whom he touched. Almost in the hour of his passing the writer heard him relating this circumstance to one of his young friends, a former student and visitor from another city, giving a reason for the faith that was in him. So when the messenger of the Lord called he was ready, filled with the assurances of the Word:

"Let not your heart be troubled: ye believe in God, believe also in me. In my Father's house are many mansions: if it were not so, I would not have told you. I go to prepare a place for you. And if I go and prepare a place for you, I will come again, and receive you unto myself; that where I am, there ye may be also. And whither I go ye know, and the way ye know."

"For we know that if our earthly house of this tabernacle were dissolved, we have a building of God, a house not made with hands, eternal in the heavens."

NEWS NOTES AND COMMENT

Dr. W. D. Haggard, of Nashville, addressed the Knox County Medical Society at a banquet held at Whittle Springs on March 30.

Dr. A. P. Bush, having completed a post-graduate course in New York, has returned to Columbia and established offices in the Woldridge Building.

Dr. Theodore Davis, of Nashville, has been elected resident physician of the Nashville General Hospital to succeed Dr. B. B. Sory, of Springfield, resigned.

According to a clipping from the Memphis Commercial-Appeal, Dr. R. Winston Carter was sentenced in the criminal court at Memphis to two years in the penitentiary on a charge of performing a criminal abortion. This paper states that "five prominent physicians of the city were called by the state to testify to the character of the defendant. Each declared that Dr. Carter's reputation was that of a physician who performed criminal abortions."

The West Tennessee Medical Association will hold its thirty-fifth annual session in Jackson on May 28, 29. Dr. E. M. Holder, of Memphis, is president of the association; Dr. J. W. Oursler, Humboldt, vice-president, and Dr. I. A. McSwain, Paris, secretary.

The Upper Cumberland Medical Society will hold their annual session at Red Boiling Springs on June 15 and 16. The society will give a banquet on the night of the 15th for the members of the society and their families.

MEDICAL SOCIETIES

The Greene County Medical Society held a meeting March 1st, and elected Dr. L. E. Dyer, Greeneville, president; Dr. H. M. Taylor, Greeneville, vice-president, and M. A. Blanton, Mosheim, secretary-treasurer. Their next meeting will be held the second Monday in April, in Greeneville.

The Montgomery County Medical Society have elected the following officers for the ensuing year: Dr. M. L. Hughes, president; Dr. I. E. Hunt, vice-president; Dr. H. A. Nesbitt, secretary-treasurer. All reside in Clarsville.

The officers of the Macon County Medical Society are as follows: Dr. J. Y. Freeman, president; Dr. Patterson East, secretary; Dr. D. D. Howser, assistant secretary; Dr. A. Y. Kirby, delegate; Dr. J. Y. Freeman, alternate. All reside in Lafayette.

The Tipton County Medical Society reports the following officers elected to serve their society: Dr. H. C. Currie, Burlison, president; Dr. J. J. Flemming, Atoka, vice-president; Dr. L. J. Lindsey, Covington, second vice-president; Dr. B. V. Dickson, Covington, secretary-treasurer. Dr. B. V. Dickson also will serve as delegate to the meeting of the state society with Dr. L. J. Lindsey as alternate.

At a meeting of McMinn County Medical Society on March 18 the society was reorganized and the following officers were elected: Dr. J. R. Nankivell, Athens, president; Dr. W. S. Moore, Etowah, vice-president; Dr. E. M. Akins, Etowah, secretary-treasurer; Dr. J. P. Nichos, Etowah, delegate; Dr. W. R. Arrants, alternate delegate to state meeting. Censors, Dr. S. B. McClary, Etowah; Dr. R. A. Brock, Athens; Dr. Joseph McGahhey, Niota.

Officers elected by the Marshall County Medical Society are as follows: Dr. S. A. Moffitt, Cornersville, president; Dr. J. A. Hardison, Lewisburg, secretary; Dr. S. T. Hardison, Lewisburg, treasurer.

The president of Cocke County Medical Society is Dr. E. E. Northcut of Newport with Dr. J. E. Hampton, secretary.

MISCELLANEOUS**UNITED STATES SUPREME COURT
DISTRUSTS THE HARRISON
NARCOTIC ACT**

The Harrison Narcotic Act was held constitutional by the United States Supreme Court in *United States v. Doremus*, 249 U. S., 86, decided March 3, 1919. The defendant offered no argument against constitutionality, and yet four of the nine justices dissented from the judgment. Moreover, the doubt as to its correctness, shown by the divided vote, has increased. In a decision just rendered in *United States v. Daugherty*, January 4, 1926, the court said:

"The constitutionality of the Anti-Narcotic Act, touching which this court so sharply divided in *United States v. Doremus*, 249 U. S., 86, was not raised below and has not been again considered. The doctrine approved in *Hammer v. Dagenhart*, 247 U. S., 251; *Child Labor Tax Case*, 259 U. S., 20; *Hill v. Wallace*, 259 U. S., 44, 67, and *Linder v. United States*, 268 U. S., 5, may necessitate a review of that question if hereafter properly presented."

The cases pointed out as possibly calling for a review of the decision in the *Doremus* case include those in which the court held unconstitutional federal statutes designed to regulate, through taxation, child labor and the operation of grain exchanges within the several states.

The Child Labor Tax Law, approved February 24, 1919, undertook to regulate child labor by taxing industries employing children. Its purpose was federal regulation of child labor, independent of state laws. The analogy between that act and the Harrison Narcotic Act is therefore clear. But the court held the law unconstitutional, saying:

"Taxes are occasionally imposed in the discretion of the legislature on proper subjects with the primary motive of obtaining revenue from them, and with the incidental motive of discouraging them by making their continuance onerous. They do not lose their character as taxes because

of the incidental motive. But there comes a time in the extension of the penalizing features of the so-called tax when it loses its character as such and becomes a mere penalty with the characteristics of regulation and punishment. Such is the case in law before us. *Child Labor Tax Case*, 259 U. S., 20, decided May 15, 1922."

The grain exchange case arose out of the Future Trading Act, approved August 21, 1921, which undertook to tax sales of grain for future delivery, so as to coerce boards of trade and their members into compliance with federal regulations. In holding the act unconstitutional the United States Supreme Court said:

"It is impossible to escape the conviction, from a full reading of this law, that it was enacted for the purpose of regulating the conduct of business of boards of trade through supervision of the Secretary of Agriculture and the use of an administrative tribunal consisting of that secretary, the Secretary of Commerce, and the Attorney General. . . . The act is in essence and on its face a complete regulation of boards of trade, with a penalty of twenty cents a bushel on all 'futures' to coerce boards of trade and their members into compliance. When this purpose is declared in the title of the bill, and is so clear from the effect of the provisions of the bill itself, it leaves no ground upon which the provisions we have been considering can be sustained as a valid exercise of the taxing power. *Hill v. Wallace*, 259 U. S., 44, decided May 15, 1922."

The Harrison Narcotic Act, as clearly shown by the regulations made under it, has for its primary purpose the regulation of traffic in narcotic drugs; the tax is manifestly only an incident, introduced to give at least color of federal jurisdiction. One needs no knowledge of law, therefore, to see that if the principles underlying the unconstitutionality of the Child Labor Tax Law and of the Future Trading Act are applied to determine the constitutionality of the Harrison Narcotic Act, that act is likely to fall. Whether this would work an unmitigated evil is open to question. The

act, like the Sheppard-Towner Act, represents federal encroachment on the constitutional rights of the states. As the court said in the Child Labor Tax Case:

"Grant the validity of this law, and all that Congress would need to do, hereafter, in seeking to take over to its control any one of the great number of subjects of public interest, jurisdiction of which the states have never parted with, and which are reserved to them by the tenth amendment, would be to enact a detailed measure of complete regulation of the subject and enforce it by a so-called tax upon departures from it. To give such magic to the word 'tax' would be to break down all constitutional limitation of the powers of Congress and completely wipe out the sovereignty of the states. Child Labor Tax Case, 259 U. S., 20, decided May 15, 1922."

Moreover, no satisfactory evidence has yet been adduced to show that the Harrison Narcotic Act has accomplished or is accomplishing its purpose, the suppression of the narcotic habit. Statistics adduced to show that narcotic addiction is less prevalent do not and cannot take into account with any degree of accuracy narcotic drugs distributed through underground channels. Nor do such statistics connect even such diminution as some of them purport to show with the operation of the act. The federal act, too, has probably tended to weaken state interest and control in the narcotic situation. If the question now raised by the United States Supreme Court does nothing more than lead to an earnest search to determine the worth of the Harrison Narcotic Act, it will have served a useful purpose.—*Jour. A. M. A.*, February 27, 1926.

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DEVOTED TO THE INTERESTS OF THE MEDICAL PROFESSION OF TENNESSEE

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A PLEA FOR PROGRESS*

W. C. DIXON, M.D., F.A.C.S., Nashville

HUMANITY owes a debt to the medical profession that can never be repaid.

No other group has done so much for the people as has the medical profession.

Yellow fever, cholera, typhoid fever, the plague, names that formerly blanched a nation's cheeks, are now largely of historic significance only.

Within the more recent past, we can view with satisfaction the advances in the handling of diphtheria and scarlet fever and the constantly falling death rate from tuberculosis.

The list of diseases which have been conquered or controlled is too long and too well known to this audience to require enumeration here.

Only such epochal incidents in history as the signing of the Magna Charta or the Declaration of Independence can compare in the sum total of their benefits to mankind with the achievement of medical science.

The doctor is an economic and sociologic necessity in the modern organization of society. He is usually a good citizen who has the interests of his community at heart,

and who gives freely of his means and his time to any worthy cause.

With such a background of achievement and the average doctor being what he is, it is a strange phenomenon of the present, that there is a large measure of dissatisfaction, implied, and expressed, with the profession of medicine.

We have only to contemplate the eagerness with which the public embrace the teachings of the various cults which spring up, no matter how fantastic may be their claims, nor how utterly they ignore the definitely established facts of medical science, to be made to realize, that, to a considerable number of people, medicine is not providing a satisfactory solution of their problems.

It is shown by the success of certain organizations which advertise to the laity that for a fee they are prepared to furnish a competent medical examination, and an analysis of the findings of such examination, the latter to be supplied from a central office by so-called experts. This scheme depends, of course, upon the gullibility of physicians, who furnish all the real work, usually for a nominal fee, while the central office reaps the profits, by acting as a middleman, in disposing of the physician's knowledge. No one can successfully argue that an explanation of the findings in a

*Presidential address delivered before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

given case cannot be given better by the man making the examination than by a person in a distant city who does not know and never saw the person examined.

And yet such institutions are springing up, obtaining a clientele and prospering.

Prominent laymen have within the recent past frankly discussed what they consider as defects in the profession of medicine.

Notable among these President Vincent of the Rockefeller Foundation has recently written on the "doctor and the changing order."

He says that "after society has caught and trained its doctors, it expects certain things from them, professional competence for example. It calls upon them to keep up with the growth of knowledge and the increase of skill, to have access to useful means of finding out what is wrong with a sick person, and of helping to set it right. Society counts also on getting sound advice about personal hygiene, it looks to doctors for understanding, individual attention, and genuine human sympathy.

It asks for a finer spirit than it requires of any other of its servants, with the sole exception of its religious leaders."

While deploring state medicine, he mildly hints that it may be the solution of the problem and concludes his article in these words: "It looks as if society means to insist upon a more efficient organization of medical service for all groups of people, upon distribution of costs of sickness over large numbers of families and individuals, and upon making prevention of disease a controlling purpose."

Facts could be multiplied to show that both within and without the profession, there is a feeling that medicine is not entirely fulfilling its destiny in the measure of its service to humanity.

There must be some reason for this feeling and it is our duty to frankly search ourselves to see if it lies within us, and if so, to see if it cannot be removed or remedied.

It is apparent to all observers that the greatest measure of responsibility in the

practice of medicine rests upon the general practitioner. He is the most useful member of the profession, and his opportunities for service far surpass those of the group called specialists. And yet the tendency toward specialization and the emphasis placed on specialists and their work, operate to the detriment of those engaged in general practice.

The general practitioner, with his broad general knowledge of disease, with his intimate personal relationship with his clients, his knowledge of their mental attributes, and their environment, is after all, the greatest specialist, and general practice is the greatest specialty.

Group practice, pay clinics, organized hospital staffs are all efforts to apply the principle of specialization to and enlist the aid of specialists on every patient.

They all serve a useful purpose, but they all tend to make a mechanical process of medical practice, and to apply the methods of the factory or the department store, to the one art which, aside from the ministry, is essentially humanitarian. To some degree they destroy the sympathetic personal contact between the doctor and the patient, which is so essential for the welfare of the patient, and yet such organizations multiply and specialists increase by leaps and bounds.

Dr. Frank Billings, the dean of American internists, says that the well equipped general practitioner can successfully handle eighty per cent of the illnesses arising in his clientele.

This presupposes, of course, good training, a reasonable familiarity with medical literature and progress, and an equipment sufficient to make the ordinary physical examination.

No one minimizes the importance of the specialist and his value in medicine, but the general practitioner is the foundation stone on which rests the whole structure of medicine, and when he measures up to his opportunities, and his work is appraised at its true value, much will be done to strengthen the position of the profession with the public.

There can be no just criticism of the profession as to its attitude toward questions affecting the public health.

It has co-operated enthusiastically in every movement to stamp out disease. Doctors are idealists who constantly work to destroy the source of their livelihood by preventing disease, and any measure that is proven of value in treatment or prevention is seized upon with eagerness.

We have, however, to a large extent looked upon this and practiced it as an impersonal thing, applied to large groups of people, and more especially insofar as acute infectious and contagious diseases are concerned.

We have stressed the achievements of preventive medicine and sanitation, and the public now accepts these as a matter of course. These things are now largely in the hands of trained health officers and sanitarians. The co-operation of the profession is needed and is always cheerfully given. The day, however, is happily past when all the influence of the profession was needed to arouse interest in such matters, to secure adequate financial support, and to enlist the aid of legislative bodies.

Our energies, now released, should be turned to new channels.

The public has set high standards for us. It expects a continuous record of achievement. We cannot rest on what has been done in the past. We must realize that the man in the street expects more of us than this.

He wants an application of our knowledge and skill to him as an individual, in an effort to prolong his life and make him happier and more efficient.

That we have such knowledge and that it is not being applied to the individual in a preventive way on a large scale, cannot be denied.

As individuals, we give advice to patients applying for it, and these are usually sick people asking for our help because of fear or pain, the two most urgent reasons for seeking medical advice. Many of these we see at a time when our help is not

so valuable as it would have been at an earlier time.

It would seem logical then for us to apply the principle of prevention to the individual.

Much of our success in lengthening the span of human life has been due to the saving of infants' and children's lives.

Little has been done for the adult except in a collective way.

It is now incumbent on us to extend our activities to include the adult, and apply to him our knowledge so that his life may be lengthened, and his happiness and efficiency increased.

It is not enough to say that our services are at the disposal of our clients, and if they wish our advice they may apply for it.

We did not assume this position with reference to the sanitary and preventive measures that have produced such wonderful results in past years. We actively advocated the adoption of these measures, and aided in disseminating information as to their value.

We now have the opportunity to repeat this service, this time on an even larger scale than before, with every man in the profession taking part in the movement, and with the prospect of attaining even more than has been attained, in longer life, better health and a larger measure of happiness.

The success of such a movement rests in the hands of the general practitioners. Their leadership is essential and the responsibility is theirs, for it is to them the public will turn with renewed faith and confidence, when it realizes that they are applying their knowledge and their skill to the problems of the individual in an effort to lengthen life and prevent disease.

They have the training and the background which peculiarly fits them for this work, and an opportunity is opened to them to lead the way in this movement which is destined to mark an epoch in medicine.

This would discourage cultism and restore the general practitioner to that place of eminence in the profession which is his

by right of his value and his service to humanity.

In order that the principles of prevention may be applied to an individual it is necessary that he should be subjected to a thorough physical examination at regular intervals, so that deviations from the normal may be discovered and corrected.

The value of such examination cannot be overestimated.

It would give the physician the opportunity to discover the beginnings of that group of chronic degenerative diseases, which claim so many victims, at a time when proper care and reasonable living conditions would allow the individual many more years of usefulness, in many cases living out his normal expectancy.

How large this group is we may visualize from the fact that recent figures show that an adult has 33 out of 100 chances of dying of disease of the heart or blood vessels, and 12 chances of dying of chronic nephritis.

Considering only this one group, it is easy to see what could be accomplished by early recognition and appropriate advice and treatment.

That practical results can be accomplished has already been demonstrated.

A large insurance company in 1914 and 1915 gave periodic examinations and advice based on these examinations to a group of 5,987 men.

During the next five years the mortality in this group was carefully studied and compared with the expected mortality for the corresponding ages, with the result that there was only seventy-two per cent of the expected mortality, a saving of twenty-eight per cent.

We were shocked to learn that of the men examined in the draft for service in the last war, thirty per cent were rejected because of defects making them unfit for military service. Such a proportion in the young and robust, would certainly indicate an even higher percentage in more advanced ages.

We have accomplished much in bringing a larger number of people to maturity,

but we have not done much toward increasing their span of useful activity after they reach maturity.

Lengthening life is a worthy aim, and deserving of every effort. Other considerations, however, enter into this subject, such as increased efficiency, and a greater ability to enjoy life. Surgeon-General Cummings has well expressed this in the following words.

"Length, it is well to remember, is not the only dimension by which to measure life even from the medical standpoint. There is also the dimension of 'breadth' which is positive health as distinguished from mere absence of disease.

It is not enough that man should be permitted to grow old. He should have vigor and vitality in the prime of life, and as he advances in years he should not be forced to suffer the debilitating and disintegrating processes associated with senility. Senescence for him should be as much a creative and productive period of life as any other. Such a prospect is certainly not beyond practical achievement."

This movement for periodic health examinations is fostered by the American Medical Association, has been adopted by many state and local societies, and is gaining momentum as it is becoming better known, and as its value is understood.

It is distinctly the duty and the obligation of organized medicine.

Merely endorsing the movement by resolution or recommendation is not sufficient.

We must assume an active and positive leadership or else stand by and see other organizations take the place which is rightfully ours.

Due to the wise and efficient administration of our Secretary, this Association has accumulated a surplus.

What greater good could be obtained from this surplus than to use it in advancing the cause of periodic health examinations? It would benefit the public in the years of usefulness and efficiency added to many lives. To the profession it would bring the satisfaction of aiding in a great

undertaking to save lives and increase personal health. Incidentally, and as a by-product, it would increase the physician's income, as the movement is unique in being the only public health measure in which physicians have been asked to co-operate, for which they would receive remuneration for their services.

Some years ago our Secretary advocated the adoption by this Association of a plan for extension courses to be given in conjunction with county and district societies. This plan contemplated the organization of short post-graduate courses, to be given in co-operation with the county societies, at points within easy reach of the members. Such a plan has been found practicable and valuable by other state societies.

We are in the advantageous position of being able to combine these two movements.

To organize and carry on an undertaking of this sort would require the entire time of one man, and would cost something in money. But the returns to the public and to the profession would be greater than could be obtained by expending a similar sum in any other way.

I recommend to this Association for its serious consideration, that it officially adopt

the movement for period health examinations, that it organize and carry out extension courses of post-graduate instruction, that a full time field secretary be employed, to operate from the Secretary's office, who shall devote his time to these movements, and that these activities shall be under the general supervision of the Secretary's office.

Tennessee is a great state, rich in history and tradition, it is a state of marvelous beauty and is endowed with natural resources of untold value.

Its people measure up to the greatness of the state, and in peace and in war they have contributed largely to the building of the nation.

The greatness of any government depends on a virile, healthy and contented citizenship, and it is our privilege and duty to foster any movement which strives for such a goal.

This Association, now nearing its centennial, has ever been a potent factor in the affairs of the state, and its membership has always stood for the best in medicine.

The hour has struck for us to again light the beacon fires that guide the people to longer and better lives.

PROCEEDINGS OF THE
TENNESSEE STATE MEDICAL ASSOCIATION
MEMPHIS, 1926

TUESDAY, MAY 11, 1926

MORNING SESSION

The Scientific Assembly was called to order at 9:30 by the Chairman, and was opened by prayer by the Reverend R. G. Lowe, Pastor of Grace Covenant Presbyterian Church.

Dr. S. F. Strain, Memphis, read a paper on "Tularemia in Tennessee." Discussed by Drs. H. G. Rudner, Memphis; Wm. Litterer, Nashville, and S. F. Strain, Memphis.

Dr. L. Carl Sanders, Memphis, read a paper on "Migraine." Discussed by Dr. W. H. Witt, Nashville.

Dr. James M. King, Nashville, read a paper on "Cancer of the Skin and Mouth." Discussed by Drs. J. Howard King, Nashville; E. R. Hall, Memphis; E. R. Campbell, Chattanooga; S. S. Marchbanks, Chattanooga, and James M. King, Nashville.

Dr. H. L. Fancher, Chattanooga, read a paper on "A Resume of Surgical Conditions of the Stomach and Duodenum." Dr. Richard A. Barr, Nashville, read a paper on "Peptic Ulcer." These two papers were discussed by Drs. Robert Caldwell, Nashville; J. A. Crisler, Sr., Memphis; Carl C. Crutchfield, Nashville; Lyle Motley, Dyersburg; H. L. Fancher, Chattanooga, and Richard A. Barr, Nashville.

TUESDAY, MAY, 11, 1926

AFTERNOON SESSION

Dr. W. W. Witt, Nashville, read a paper on "Pernicious Anemia." Discussed by Drs. Lyle Motley, Dyersburg; Carl C. Crutchfield, Nashville; G. P. Jones, Memphis; John Burch, Nashville; C. F. Anderson, Nashville, and W. W. Witt, Nashville.

Dr. E. H. Baird, Dyersburg, read a paper on "A Review of One Hundred Consecutive Cases of Appendicitis Operated During the Past Year." Dr. J. G. Eblen, Lenoir City, read a paper on "Apendicitis

in Pregnancy." These two papers were discussed by Drs. J. L. Morgan, Memphis; R. A. Barr, Nashville; K. S. Howlett, Franklin; E. R. Zemp, Knoxville; C. F. Anderson, Nashville; W. T. Black, Memphis; E. R. Baird, Dyersburg, and J. G. Eblen, Lenoir City.

Dr. C. F. Anderson, Nashville, read a paper on "Complete Bilateral Duplication of Ureters and Renal Pelvis." Discussed by Dr. R. A. Hennessey, Memphis.

Dr. Wm. Litterer, Nashville, read a paper on "Comparison of the Wasserman Test with the Kahn Test on 17,000 Serums." Discussed by Drs. William Krauss, Memphis, and Wm. Litterer, Nashville.

TUESDAY, MAY 11, 1926

EVENING SESSION

The meeting was called to order at 8:25 by the President.

Dr. W. C. Dixon, Nashville, delivered the Presidential Address.

Dr. Maurice J. Gelpi, New Orleans, La., read a paper entitled, "A Study of Gall-Bladder Disease with Special Reference to Postoperative Mortality and Morbidity."

Dr. Arthur E. Hertzler, Kansas City, Mo., read a paper entitled, "The Genesis and Significance of Peritoneal Adhesions."

Dr. R. S. Duke, Nashville, read a paper entitled, "Milk Injection in the Treatment of Infections of the Female Genital Tract (Preliminary Report of Twenty-two Cases)." Discussed by Drs. L. E. Burch, Nashville, W. T. Black, Memphis, J. M. Maury, Memphis, Carl C. Crutchfield, Nashville, and R. E. Duke, Nashville.

Dr. Watt Yeiser, Columbia, read a paper entitled, "Immunization Against Measles with Convalescent Serum." Discussed by Drs. J. J. Hobson, Memphis, William Litterer, Nashville, Gilbert Levy, Memphis, W. R. Blue, Memphis, and Watt Yeiser, Columbia.

Meeting adjourned at 10:30 P.M.

WEDNESDAY, MAY 12, 1926

MORNING SESSION

Dr. J. C. Ayres, Memphis, read a paper on "Conservation of the New-born." Discussed by Drs. K. S. Howlett, Franklin; E. R. Zemp, Knoxville; John S. Cayce, Nashville, and J. C. Ayres, Memphis.

Dr. S. S. Marchbanks, Chattanooga, read a paper on "Co-operation of Practitioners with the Radiologist." Discussed by Drs. H. S. Shoulders, Nashville, and S. S. Marchbanks, Chattanooga.

Dr. W. H. Hundling, Memphis, read a paper on "Surgical Lesions of the Ileocecal Region of Special Interest. (No discussion.)"

Dr. Thomas D. Moore, Memphis, read a paper on "The Diagnosis of Bladder Atony." Discussed by Drs. I. G. Duncan, Memphis, and Thomas D. Moore, Memphis.

Dr. K. S. Howlett, Franklin, read a paper entitled, "The Physician and the Public Health."

Dr. M. Smith, Ardmore, read a paper entitled, "The Rural Medical Situation."

Dr. W. J. Breeding, Nashville, read a paper entitled, "The Question of An Inadequate Supply of Rural Physicians in Tennessee Based on a Statistical Study of Relative Number and Ages of Urban and Rural Physicians for Twenty-year Period."

These three papers were discussed jointly by Drs. E. L. Bishop, Nashville; A. F. Richards, Sparta; W. K. Sheddan, Columbia; H. H. Shoulders, Nashville; W. C. Dixon, Nashville; W. S. Farmer, Nashville; K. S. Howlett, Franklin; M. Smith, Ardmore, and W. J. Breeding, Nashville.

WEDNESDAY, MAY 12, 1926

AFTERNOON SESSION

Dr. C. R. Crutchfield, Nashville, read a paper by Drs. William D. Haggard and C. R. Crutchfield, Nashville, on "The Essentials in the Management of the Goiter Problem." Discussed by Drs. J. B. Haskins, Chattanooga, and C. R. Crutchfield, Nashville.

Dr. J. A. McIntosh, Memphis, read a paper on "A Study of the Etiology of Granuloma Inguinale." Discussed by Drs.

Wm. Litterer, Nashville; H. C. Schmeisser, Memphis; Joseph Smith, Memphis; William Krauss, Memphis; I. G. Duncan, Memphis, and J. A. McIntosh, Memphis.

Dr. Joel Y. Alexander, Middleton, read a paper on "Diagnosis and Treatment of the Primary Stages of Syphilis." Discussed by Drs. O. P. Walker, Memphis; M. G. Spingarn, Memphis, and Joel Y. Alexander.

Dr. Gilbert J. Levy, Memphis, read a paper on "Antitoxin Treatment of Scarlet Fever." Dr. Arthur G. Jacobs, Memphis, read a paper on "The Present Day Management of Scarlet Fever." Discussed by Drs. William Krauss, Memphis; William Litterer, Nashville; Gilbert J. Levy, Memphis, and Arthur G. Jacobs, Memphis.

WEDNESDAY, MAY 13, 1926

EVENING SESSION

The meeting was called to order at 8:20 P.M. by the President.

Dr. William Krauss, Memphis, read a paper entitled, "Relapses in Malaria." Discussed by Drs. J. W. Sanford, Ripley; M. G. Spingarn, Memphis, and I. G. Duncan, Memphis.

Dr. M. G. Spingarn, Memphis, read a paper entitled, "Polycystic Kidney, Its Pathogenesis, Symptomatology and X-Ray Diagnosis."

Dr. Earl R. Campbell, Chattanooga, read a paper entitled, "Traumatic Kidney."

These two papers were discussed jointly by Drs. L. J. Smith, Memphis, Harry C. Schmeisser, Memphis; W. S. Lawrence, Memphis; J. F. Morgan, Memphis; M. G. Spingarn, Memphis, and Earl R. Campbell, Chattanooga.

Dr. Jack Witherspoon, Nashville, read a paper entitled, "Clinical Diagnosis of Gall-Bladder Disease." Discussed by Dr. O. S. Warr, Memphis.

Dr. W. S. Lawrence, Memphis, read a paper entitled, "The Present Status of High Voltage X-Ray Therapy—Indications and Limitations." Discussed by Drs. J. L. Jelks, Memphis, Sidney Meeker, Memphis, and W. L. Lawrence, Memphis.

Adjournment at 10:30 P.M.

THURSDAY, MAY 13, 1926

MORNING SESSION

Dr. Harry C. Schmeisser, Memphis, read a paper by Drs. Harry C. Schmeisser and Joseph L. Scianni, Memphis, on "Art as Applied to Medicine." Discussed by Drs. Joseph Smith, Memphis; E. R. Zemp, Knoxville, and Harry C. Schmeisser, Memphis.

Dr. W. Scott Farmer, Nashville, read a paper on "The Importance of Mental Examinations." Discussed by Dr. R. E. Lee Smith, Knoxville.

Dr. Otis C. Warr, Memphis, read a paper on "Spontaneous Rupture of the Heart." Discussed by Drs. E. R. Zemp, Knoxville; J. A. McIntosh, Memphis; W. K. Sheddan, Columbia; Hilton Carr, Memphis; Harry C. Schmeisser, Memphis, and Otis S. Warr, Memphis.

Dr. R. L. Sanders, Memphis, read a paper on "Surgical Significance of Jaundice." Discussed by Drs. L. L. Sheddan, Knoxville; W. A. Bryan, Nashville; J. A. McIntosh, Memphis; Hilton Carr, Memphis, and R. L. Sanders, Memphis.

Dr. C. C. Turner, Memphis, read a paper

on "The Treatment of General Paresis." Discussed by Drs. J. A. McIntosh, Memphis; T. B. Yancey, Kingsport, and C. C. Turner, Memphis.

THURSDAY, MAY 13, 1926

AFTERNOON SESSION

The following papers were read by title: "Kinks and Strictures of the Ulcer" by Dr. I. G. Duncan, Memphis;

"Angina Pectoris" by Dr. Hilton R. Carr, Memphis;

"Complications of Colitis" by Dr. J. L. Jelks, Memphis;

"Surgical Drainage of the Intestines" by Dr. H. H. Shoulders, Nashville;

"Report of Three Hundred and Fifty Cases of Twilight Sleep" by Dr. Sidney Meeker, Memphis;

"Radiotherapy in Cancer of the Uterine Cervix" by Dr. W. S. Anderson, Memphis;

"Tuberculosis" by Dr. J. H. Gammon, Coal Creek;

"Right Sided Eventration of the Diaphragm" by Dr. H. G. Rudner, Memphis.
(No discussion.)

MINUTES OF THE EYE, EAR, NOSE AND THROAT SECTION MEMPHIS, 1926

MONDAY, MAY 10

The meeting of the Eye, Ear, Nose and Throat Section was called to order on Monday, May 10, 1926. at 9:25 A.M., by the Chairman, Dr. Willard Steele, Chattanooga.

Dr. E. C. Ellett, Memphis, read a paper entitled, "Cycloplegic's Complications." Discussed by Drs. G. C. Savage, Nashville, Harry Gradle, Chicago, D. H. Anthony, Memphis; P. M. Lewis, Memphis; L. M. Scott, Jellico; Herschel Ezell, Nashville; A. C. Lewis, Memphis; G. C. Savage, Nashville, and E. C. Ellett, Memphis.

Dr. Frederick E. Hasty, Nashville, read a paper entitled, "Neurological Complications of Mastoid Disease with Reports of Cases." Discussed by Drs. C. D. Blassingame, Memphis; W. W. Potter, Knoxville; William Kennon, Nashville; P. M. Lewis, Memphis; J. B. Blue, Memphis; H. E. Christenberry, Knoxville; E. C. Ellett, Memphis, and F. E. Hasty, Nashville.

Dr. L. M. Scott, Jellico, read a paper entitled, "Treatment of Corneal Ulcers." Discussed by Drs. Harry Gradle, Chicago; E. C. Ellett, Memphis; J. D. Carlton, Union City; A. B. Dancy, Jackson; G. C. Savage, Nashville; Herschel Ezell, Nashville; A. C. Lewis, Memphis; S. Lawwill, Chattanooga, and L. M. Scott, Jellico.

Dr. Stewart Lawwill, Chattanooga, read a paper entitled, "Considerations of the Septum."

Dr. J. Lyle Davis, Chattanooga, read a paper entitled, "Symptoms Indicating Nasal Sinus Surgery."

These two papers were discussed jointly by Drs. J. B. Blue, Memphis; Robert Sullivan, Nashville; John J. Shea, Memphis; Richmond McKinney, Memphis; Charles D. Blassingame, Memphis; H. E. Christenberry, Knoxville; William Kennon, Nashville; Louis Levy, Memphis; Stewart Lawwill, Chattanooga, and J. Lyle Davis, Chattanooga.

Dr. Earl Goyer, Jackson, read a paper

entitled, "Electro-Coagulation of Tonsils." Discussed by Drs. Louis Levy, Memphis, W. S. Lawrence, Memphis; William Kennon, Nashville; F. E. Hasty, Nashville, and Earl Goyer, Jackson.

The Chair announced the appointment of the Committee on Nominations as follows:

Dr. William Kennon, Nashville;
Dr. Louis Levy, Memphis;
Dr. W. W. Potter, Knoxville.

REPORT OF NOMINATING COMMITTEE

Dr. William Kennon made the following report for the Committee on Nominations:

Chairman: A. B. Dancy, Jackson;
Vice-Chairman: Stewart Lawwill, Chattanooga;

Secretary: D. Harbert Anthony, Memphis.

DR. A. B. DANCY: I feel somewhat embarrassed at this time on being elected your Chairman because I have done so little work this past year. I was ill in the early part of the year and was unable to co-operate with Dr. Steele. I have no doubt that this year we can make this Section a valuable one. I hope you will co-operate with me next year and that all of you will present sufficient papers to make this Section meeting one of the largest we have ever had.

DR. STEWART LAWWILL: I will be glad to co-operate and assist in any way I can. I wish to thank the members for the honor.

DR. D. H. ANTHONY: I appreciate the honor of being re-elected. I want to thank the men who presented papers and co-operated with us. Things were a little against us. The meeting was delayed on account of the change in date and some of the men did not have time to prepare papers. I assure you that next year you will have plenty of time.

Meeting adjourned at 1:05 p.m.]

MINUTES OF THE
TENNESSEE STATE ASSOCIATION OF RAILWAY SURGEONS
MEMPHIS, 1926

MONDAY, MAY 10

MORNING SESSION

The section was called to order at 9:30 by the chairman, Dr. Wm. S. Anderson, Memphis.

Dr. Matt B. Murfree, Murfreesboro, read a paper on "Head Injuries." Discussed by Drs. Duncan Eve, Sr., Nashville, and V. L. Lewis, Crossville.

Dr. Roy A. Douglass, Huntington, read a paper on "First Aid to the Severely Injured." Discussed by Drs. A. F. Richards, Nashville; John C. Burch, Nashville, and Roy A. Douglass, Huntington.

Dr. Duncan Eve, Sr., Nashville, gave a paper on "Pott's Fracture." Discussed by Drs. A. F. Richards, Nashville; Roy A. Douglass, Huntington; J. M. Clack, Rockwood, and Duncan Eve, Sr., Nashville.

Dr. John C. Burch, Nashville, read a paper on "Traumatic Shock." Discussed by Drs. W. S. Anderson, Memphis; A. F. Richards, Nashville; B. S. Rhea, Lebanon; Roy A. Douglass, Huntington; G. W. Moody, Shelbyville, and John C. Burch, Nashville.

MONDAY, MAY 10

AFTERNOON SESSION

Dr. M. B. Hendrix, Memphis, read a paper on "Acute Traumatic Spinal Injuries." Discussed by Drs. Duncan Eve, Sr., Nashville; J. T. Moore, Allgood; W. S. Anderson, Memphis, and H. B. Everett, Memphis.

Dr. Wm. Sailer Anderson, Memphis, read the chairman's address, entitled "The Treatment of Injured Joints." Discussed by Dr. M. B. Hendrix, Memphis.

Mr. R. W. Snell, Memphis, demonstrated a few practical points regarding artificial limbs.

Dr. W. L. Howard, Memphis, gave a paper on "The Tonsil and Its Bearing on the Health of the Railway Employees." Discussed by Dr. W. L. Howard, Memphis.

The minutes of the previous meeting were read and approved.

The following officers were elected: Chairman, Dr. A. F. Richards, Nashville; vice-chairman, Dr. Matt Murfree, Murfreesboro, secretary; Dr. H. B. Everett, Memphis; delegate to annual meeting of American Railway Surgeons Association, Dr. Duncan Eve, Sr., Nashville.

TENNESSEE STATE MEDICAL ASSOCIATION MEETING OF THE COUNCIL

The Council was called to order at 10:45 a.m., Wednesday, May 12, by the chairman, Dr. S. R. Miller.

The matter of the Rutherford County Society was considered. A petition was presented signed by twenty-two members accompanied by a proposed constitution and by-laws, asking for a new charter.

The chairman stated that there was no record of this society having surrendered its charter, although the secretary stated that he had some records in his office.

In the second place, a counter petition was presented, signed by a number of men who signed the first petition, asking that the charter be not revoked.

Dr. J. P. Taylor stated that the whole matter resolved itself into this, that here were certain men practicing in Rutherford County who were objectionable to a certain other group, and the latter have resorted to this method of eliminating the objectionable men. They have never proven any charges against these men or one man in particular. They have never tried him for unethical conduct. I believe under the circumstances the matter should be referred back to the county.

Dr. M. S. Herron moved that the matter be referred back to the local society. (Motion seconded and carried.)

The next order of business was a discussion of candidates to be elected in the various districts.

Dr. H. B. Everett asked if it would not be a good plan to have Dr. Baird and Dr. Herron present an amendment to the by-laws asking that charters be granted to joint societies similar to the one Dr. Baird has in his neighborhood. No action was taken.

The Council adjourned to meet on Thursday morning.

SECOND MEETING OF THE COUNCIL

The second meeting of the Council was called to order on Wednesday, May 12, at 4:20 p.m., by the chairman.

The chairman announced that the secretary's office would furnish as many journals as the Councillors desired to send to doctors who were not members of the Association.

The next order of business was the election of a chairman for next year. Dr. E. H. Baird, Dyersburg, moved that Dr. S. R. Miller be elected chairman. (Motion seconded and carried.)

There followed a discussion of the problems in the different districts.

Adjournment.

TENNESSEE STATE MEDICAL ASSOCIATION HOUSE OF DELEGATES

The first meeting of the House of Delegates was called to order at 2:10 p.m., May 11, 1926, by the Speaker of the House, Dr. H. B. Everett, of Memphis.

THE SPEAKER: I will ask the Secretary to read the roll-call.

The Secretary then read the roll-call.

THE SPEAKER: The delegates present have been seated. There is a quorum present and we shall proceed to business. The first order of business will be the reading of the minutes of the previous meeting.

THE SECRETARY: It has been customary to offer as the minutes of the last meeting the minutes as published in the April issue of the Journal.

DR. W. K. SHEDDAN, Columbia: I move that the House of Delegates adopt the minutes as they appeared in the Journal of April, 1925. (Motion seconded and carried.)

THE SPEAKER: The next order of business is the selection of a Nominating Committee. This committee is composed of three members of the House of Delegates from each grand division of the state, no two of whom should be from the same county. It has been the custom in the past to declare the House at rest for a few minutes to allow each division to have its caucus and select the members of this Nominating Committee. The committee is instructed to hold as many meetings as necessary to serve the interests of the Society and to not make public their nominations until the last meeting of the House of Delegates on Thursday morning. The presidency this time goes to East Tennessee, as it is customary to rotate the presidency to each grand division of the state. (The House then adjourned for ten minutes.)

The House was then called to order and the following committees were announced:

East Tennessee: W. K. Vance, Bristol; L. L. Shedd, Knoxville; L. T. Stem, Chattanooga.

Middle Tennessee: W. J. Breeding, Sparta; W. K. Shedd, Columbia; Robert Caldwell, Nashville.

West Tennessee: J. W. Sanford, Ripley; W. B. Burns, Memphis; T. B. Wingo, Martin.

THE SPEAKER: The first meeting of the Nominating Committee will be held today at the adjournment of the House of Delegates.

We will now have the Secretary's report.

SECRETARY'S REPORT

To the House of Delegates of the Tennessee State Medical Association.

Gentlemen:

This meeting is the ninety-third annual session

of the Tennessee State Medical Association and the ninety-sixth year of its existence.

The year has been marked by a very pleasant relationship between the Secretary's office and the profession at large. Every effort has been made to render any assistance possible to the members of the profession and the co-operation of the profession has been splendid. While the work of the office increases year by year, the business has been dispatched as well as it could be with the force available to perform it.

It again became necessary to postpone the time of meeting. After consultation with the officers, who are clothed with power by our new Constitution to change the date of a meeting, a letter was sent to every member notifying him of the fact and with a full explanation of the reason therefor. This action was taken after mature deliberation and it is hoped that this change will not seriously interfere with the success of this meeting.

Your Committee on Revision of the Constitution and By-Laws, composed of Dr. S. R. Miller, Dr. A. F. Richards and the Secretary, following the instructions of the House of Delegates at the ninety-second annual meeting of the Association, completed its work and the new Constitution and By-Laws was published in the Journal. This Constitution and By-Laws has not been put in pamphlet form for the reason that it was thought that possibly some changes might be made by the House of Delegates at this session and it was desired to have the document in as complete form as possible before it was made up into a relatively permanent document. It may be stated that this was done, although the House of Delegates had given the committee plenary power in the matter. As soon as possible after this meeting the new Constitution and By-Laws will be published in pamphlet form and mailed to each member of the Association.

The membership enrollment for the past year was 1,550. This is an increase of five members over last year. Our books show that the following counties reported for 1925: Anderson, Bedford, Blount, Bradley, Campbell, Carroll, Chester, Cooke, Crockett, Cumberland, Davidson, Decatur, Dickson, Dyer, Franklin, Gibson, Giles, Greene, Grundy, Hamilton, Hamblen, Hardeman, Hawkins, Henderson, Henry, Hickman, Jackson, Jefferson, Knox, Lake, Lauderdale, Lawrence, Lincoln, Loudon, Macon, Madison, Marshall, Maury, Monroe, Montgomery, McMinn, McNairy, Obion, Overton, Polk, Putnam, Rhea, Roane, Robertson, Rutherford, Scott, Shelby, Smith, Sullivan-Carter-Johnson, Sumner, Tipton, Warren, Washington, Weakley, White, Williamson and Wilson.

On February 1, 1926, the Rutherford County Medical Society, by a majority vote, surrendered its charter and it is now in the possession of the Secretary. On March 2, 1926, the following petition from physicians residing in Rutherford County was received by the Secretary:

"Murfreesboro, Tenn., March 2, 1926.

"To the House of Delegates of the Tennessee State Medical Association, at its annual session, April, 1926, in Memphis, Tennessee:

"We the undersigned physicians of Rutherford County, State of Tennessee, all of whom are reputable and legally registered and practicing non-sectarian medicine, respectfully petition your honorable body to issue to the undersigned a charter for organization and operation as the Rutherford County Medical Society."

(Signed) J. Clyde Overall, M.D.; J. S. Lowry, M.D.; J. M. Shipp, M.D.; W. J. Engles, M.D.; J. S. Hall, M.D.; J. F. Adams, M.D.; A. N. Gordon, M.D.; J. C. Kelton, M.D.; J. R. Gott, M.D.; V. S. Campbell, Mat B. Murfree, W. F. Robison, J. S. Scott, A. J. Jamison, M.D.; Mayne B. McCrary, B. M. White, B. L. Ousley, H. L. McGee, B. R. McKnight, S. B. Smith, John J. Garrett, J. R. Moon, J. W. Cartwright, R. C. Garrett.

The original petition is herewith attached.

As has been noted, this is the ninety-third annual session of our Association, but it is the ninety-sixth year of our corporate existence. This apparent disparagement is due to the fact that during the Civil War three years elapsed during which time no sessions of the Association were held. From reliable sources your Secretary discovered that the Tennessee State Medical Society was incorporated by the State Legislature in 1830. It will be seen, therefore, that we have but four years in which to prepare for that occasion. If we are to have a celebration worthy of the great traditions of the medical profession of this state, steps should be immediately taken in preparation thereof. At the annual session of the Association held in Memphis in 1922, a committee composed of Dr. Duncan Eve, Sr., Dr. G. C. Savage and Dr. Deering J. Roberts, now deceased, was appointed to compile the data for the writing of a history of our Society. Dr. Eve informs me that the data has been compiled, but the history itself has not been written. This work will take considerable time and some one should be employed at once to begin that task.

At the meeting of the American Medical Association held in Atlantic City in May, 1925, a reapportionment of delegates for 1926 was made, which gave Tennessee three delegates. It will be recalled that at a previous session of the American Medical Association, held in Chicago in 1924, our representation in the House of Delegates was reduced to two. It will be necessary, therefore, for the House of Delegates of this Association to elect another delegate at this session. Inasmuch as the American Medical Association

met last month, your president and secretary in the emergency appointed Dr. H. L. Fancher delegate pro tem to the end that we might have full representation. His credentials were accepted and he served in the House of Delegates together with our other delegates during the meeting in Dallas.

I would call your attention to an item which occurs in the Treasurer's report. This report shows that there was a cash balance on hand March 31, 1926, of \$14,931.50. I hope I may be pardoned if I may add parenthetically that this represents the net accumulated surplus of \$6,243.39 during my three years of office. Be that as it may, the reason I am bringing this matter to your attention is that it is my opinion that this money should not be allowed to accumulate from year to year, but should be expended in some way for the good of the profession. In my report to the House of Delegates in 1924 I brought the matter of graduate medical instruction in rural communities to the attention of the House of Delegates. I was instructed to find out if there was a demand on the part of the profession of the state for such an effort. Being unable to visit the county medical societies individually, I attended the meetings of the three sectional medical societies of the state and presented the matter to them. After an explanation of the proposed plan, it met with almost an unanimous approval. This fact was reported to this body in my report at the 1925 session, but no action was taken.

Since that time another movement has gained considerable impetus throughout the country and that is—periodic health examination. Dr. Dixon, in his presidential address, has strongly urged the official adoption of this enterprise, but we must go further than merely going through the formality of an official adoption. After giving considerable thought to both the idea of graduate medical instruction in rural communities and the matter of periodic health examinations of the apparently healthy, I think a plan could be devised by which these matters could be carried out jointly. I am convinced that this cannot be done by the appointment of a committee, but some one should be employed who would devote their whole time and attention to the matter. It has been the experience of states that have undertaken this type of graduate medical instruction that in a few years it became practically self-sustaining, financially speaking; and even did it not, in what better manner could we expend our accumulated surplus? I urgently suggest that definite and positive action be taken at this meeting to the end that these matters be put into immediate operation.

After conversation with a number of members of the Association, I am convinced that very few have any conception of the amount of work that devolves upon the Secretary's office, and I wish to

take this opportunity to say frankly that the work could not be carried on were it not for the efficiency and interest of my secretary, Mrs. Frances Boner. Her efforts contribute in no little measure to whatever success that may have crowned the efforts of this office.

Respectfully,

J. F. GALLAGHER,
Secretary.

DR. J. C. WILSON, Rockwood: I move that the report be adopted. (Motion seconded.)

THE SPEAKER: Your receiving the report is very well, but we cannot go anywhere with a report as important as this by simply receiving and filing it. There are a number of paragraphs in this report that need special consideration.

DR. W. K. SHEDDAN, Columbia: I move that the Secretary's report be referred to a committee of three, one from each grand division of the state, to investigate the suggestions and make a report to the House of Delegates tomorrow or the next day. (Motion seconded.)

DR. J. C. WILSON, Rockwood: I accept the amendment.

THE SPEAKER: Inasmuch as the President's report tonight will have some bearing on the Secretary's report, if there are no objections I will set this report as special order of business for tomorrow afternoon. (Motion carried.)

The next order of business will be the report of the Treasurer.

REPORT OF THE TREASURER

Dr. J. O. Manier

Dr. J. O. Manier, Treasurer, Tennessee State Medical Association, Nashville, Tennessee.

Dear Sir: Complying with your instructions, we have made the annual examination of the cash book of the Tennessee State Medical Association, kept in their office in Nashville, for the fiscal year April 1, 1925, to March 31, 1926, and submit this report of receipts and disbursements for the year and assets on hand at the close of March 31, 1926.

The examination and report, except for verification of funds on hand March 31, 1926, is concerned only with cash transactions, no accrued items, either receivable or payable, being considered.

Funds on Hand—Schedule A

Funds on hand March 31, 1925, being bank balance of \$12,757.01, were increased during the year by the excess of receipts over operating disbursements, of \$2,073.67, to \$14,830.68, which is represented by March 31, 1926, bank balance of \$6,830.68, and mortgage loan notes of \$8,000.00 purchased during the year.

The balance in bank was verified from bank's statement, reconciled to book balance as shown by Exhibit A-2. The mortgage loan notes were verified by actual inspection of the notes.

Receipts and Disbursements—Exhibits A-1 and A-1-a

Exhibits A1 and A-1-a show the details of the total receipts of \$9,524.08 and the total operating disbursements of \$7,450.41.

A separate statement is given for receipts and disbursements for the Medical Journal, showing disbursements to exceed receipts by \$1,478.42. These figures are included in the statement of receipts and disbursements, Exhibit A-1.

GENERAL

The additions and forwardings of the cash for the year were verified and all cancelled checks for the period checked into the cash book and found properly entered. Total receipts for the year as shown by the cash book were found in agreement with total deposits shown on bank's statements, and in our opinion the cash transactions for the year are correctly reflected on the statement of receipts and disbursements.

Respectfully submitted,

HOMER K. JONES & CO.,
Certified Public Accountants.

Nashville, Tenn., April 28, 1926.

STATEMENT OF FUNDS ON HAND MARCH 31, 1926

In Bank:	
Balance in bank per audit report,	
March 31, 1925	\$12,757.01
Add excess of receipts over disbursements, Exhibit A-1	2,073.67
	<hr/> \$14,830.68

Less invested in mortgage loan notes:

Maker	Amount	
Morton Tyree	\$2,100.00	
Adele Morton Ridley	2,500.00	
P. T. Gibson	1,700.00	
W. H. Jackson	1,700.00	8,000.00

Bank balance March 31, 1926,

Exhibit A-2	\$ 6,830.68
\$642.00 in Medical Defense Funds.	
Opening balance	\$12,757.01
Receipts	9,524.08
Disbursed	7,450.41
Invested	8,000.00
	<hr/> 15,450.41

Closing balance \$ 6,830.68

Assets:

Bank account	\$6,830.68
Investments	8,000.00
	<hr/> \$14,830.68

This statement subject to comments contained in the summary of this report.

STATEMENT OF RECEIPTS AND DISBURSEMENTS

April 1, 1925, to March 31, 1926, Inclusive

Receipts

From dues	\$5,228.00
From Medical Defense	895.00
From advertising	2,856.97
From interest:	
On bank balance	\$304.11
On investments	240.00
	<hr/> 544.11

Total receipts, Exhibit A-1-a \$9,524.08

Disbursements

Dr. S. R. Miller, chairman		
Medical Defense -----	\$ 253.00	
Medical Journal:		
Printing 10 issues-----	\$2,677.49	
Postage 10 issues-----	164.84	
Press Clipping Service---	36.00—	2,878.33
1925 Convention Expense:		
Medical Reporter -----	457.06	
Programs -----	88.75	
Badges -----	62.10	
Folders -----	13.50—	621.41
Salaries:		
Dr. J. F. Gallagher, Secretary -----	1,500.00	
Mrs. Frances P. Boner---	1,200.00—	2,100.00
Legislative Committee -----		301.67
Delegate to A. M. A. Convention, expense allowance -----		50.00
Office rent -----		180.00
Stationery, printing and office supplies -----		85.81
Postage -----		55.00
Telephone -----		45.82
Auditing -----		25.00
Towel service -----		12.00
Office repairs and cleaning-----		7.95
Typing work -----		36.00
Binding Medical Journals -----		22.50
Check protector -----		15.50
A. M. A. Directory -----		12.00
Dues refunded -----		47.60
Accrued interest on mortgage notes purchases -----		100.82
Total operating disbursements-----		\$7,450.41
Excess of receipts to Schedule A-----		2,073.67

STATEMENTS OF RECEIPTS

April 1, 1926, to March 31, 1926, Inclusive

	Dues	Medical Defense	Advertising	Interest	Total
1925					
Apr. ---\$	724.00	\$126.00	\$ 261.87	\$304.11	\$1,415.98
May ---	143.00	19.00	202.97	-----	364.97
June ---	68.00	5.00	169.87	-----	242.87
July ---	56.00	11.00	256.75	-----	323.75
Aug. ---	68.00	5.00	303.55	-----	376.55
Sept. ---	32.00	6.00	201.25	-----	239.25
Oct. ---	20.00	4.00	252.71	-----	276.71
Nov. ---	48.00	-----	306.12	177.00	531.12
Dec. ---	292.00	63.00	398.32	-----	753.32
1926					
Jan. ---	561.00	117.00	346.80	63.00	1,087.80
Feb. ---	724.00	157.00	14.70	-----	895.70
Mar. ---	2,492.00	382.00	142.06	-----	3,016.06
	\$5,228.00	\$895.00	\$2,856.97	\$544.11	\$9,524.08

RECONCILEMENT OF ACCOUNT WITH AMERICAN TRUST COMPANY

March 31, 1926

Balance per bank's statement-----	\$6,929.68
Less outstanding checks:	
No. 117 to Dr. S. R. Miller--	\$46.00
No. 144, Central Press Clipping Service -----	3.00
No. 145, Frances P. Boner--	50.00—
	99.00
Balance per books, March 31, 1926--	\$6,830.68

STATEMENT OF MEDICAL JOURNAL**Receipts**

Advertising -----	\$2,856.97
-------------------	------------

Disbursements

Printing ten issues through	
December issue -----	\$2,677.49
Postage ten issues through	
December issue -----	164.84
Salary, Dr. J. E. Gallagher,	
two-thirds -----	1,000.00

Medical Reporter at 1925

convention -----	457.06
Press Clipping Service-----	36.00

Total disbursements ----- 4,335.39

Excess of disbursements over receipts--\$1,478.42

The amounts on this statement are included in those on Exhibit A-1.

THE SPEAKER: It is customary to refer the Treasurer's report to an auditing committee. I will entertain a motion to have that done.

DR. J. W. SANFORD, Ripley: I move that the Chair appoint an Auditing Committee to verify the Treasurer's report. (Motion seconded and carried.)

THE SPEAKER: I will appoint on that committee Drs. J. W. Sanford, Ripley; A. F. Richards, Sparta, and Jesse Hill, Knoxville.

The next order of business is the report of Standing Committees.

REPORT OF COMMITTEE ON SCIENTIFIC WORK

Dr. J. F. Gallagher

I submit the program as published as the report of the Committee on Scientific Work.

I would like to take this opportunity to thank my associates on this committee for the very great interest shown in compiling this program. The only fear I have of the program is that it is too much, but everybody had equal rights and everyone who was willing to read a paper thought he had a right to appear on the program and he was placed on the program in the order in which his request was received.

DR. A. F. RICHARDS, Sparta: I move that the report be received and the committee thanked for their services. (Motion seconded and carried.)

REPORT OF COMMITTEE ON MEMORIALS

Dr. J. F. Gallagher

The following members of the Tennessee State Medical Association have died during the past year:

- Dr. H. J. Kelso, Knoxville, Knox County.
- Dr. C. C. Dearmond, Knoxville, Knox County.
- Dr. B. D. Bosworth, Knoxville, Knox County.
- Dr. L. H. Milligan, Morristown, Hamblen County.
- Dr. J. A. Blackmon, Jackson, Madison County.
- Dr. G. H. Savage, Memphis, Shelby County.
- Dr. Frank D. Smythe, Memphis, Shelby County.
- Dr. C. W. Womack, Nashville, Davidson County.
- Dr. S. C. Huff, Christiana, Rutherford County.
- Dr. James J. Rucker, Overall, Rutherford County.
- Dr. T. M. Smoot, Woodbury, Cannon County.
- Dr. J. R. Davis, Union City, Obion County.
- Dr. J. M. Anderson, Fayetteville, Lincoln County.
- Dr. T. J. McKamy, Cleveland, Bradley County.

Dr. J. L. Clark, Johnson City, Washington County.

Dr. T. E. Abernathy, Chattanooga, Hamilton County.

Dr. W. M. Orr, Chattanooga, Hamilton County.

Dr. Walter S. Dotson, Lebanon, Wilson County.

Dr. W. G. Ruble, Morristown, Hamblen County.

These members died, but were not on last year's report:

Dr. B. L. McDonald, New River, Hamblen County, March 20, 1925.

Dr. W. W. Taylor, Memphis, Shelby County, April 7, 1925.

Dr. D. J. Roberts, Nashville, Davidson County, April, 1925.

I will say that it has been our effort to publish the deaths of all reputable white doctors in the state, but I make a report only of those who belonged to the State Association. I received scant support in getting these reports of deaths of members and I have had to resort to newspaper clippings for the reports that I did get. Often when resolutions are adopted which should be published, they are not sent in until long after the member has died. I would suggest that the secretaries make prompt reports to the Secretary's office and send in resolutions promptly. One thing that would be of help: Manuscripts should be written on one side of the paper and double spaced. It is quite a task to rewrite these resolutions when written in pen and ink or single spaced.

DR. L. T. STEM, Chattanooga: I move that the report be received and filed. (Motion seconded and carried.)

THE SPEAKER: I shall appoint on the committee to consider the Secretary's report Drs. O. S. McCown, Memphis; J. Howard King, Nashville, and H. L. Fancher, Chattanooga, and J. F. Gallagher, ex-officio.

REPORT OF COMMITTEE ON PUBLIC POLICY AND LEGISLATION

Dr. H. M. Tigert

Dr. Tigert was not present, but the Secretary reported that he had received a letter from Dr. Tigert stating that inasmuch as the legislature was not in session this year, he had no report to make.

REPORT OF THE COMMITTEE ON MEDICAL DEFENSE

Dr. S. R. Miller

Your Committee on Medical Defense submits herewith the twelfth annual report of its activities.

In 1925, 1,279 members paid the defense fee, which was twenty-eight more than the previous year.

This year many of the fees have been paid to the State Association and, under the new Constitution and By-Laws, are not reported to this committee. This is probably the first step

towards having all this committee's work done by an all-time well-paid secretary. Better and larger organization and progress should eventually bring us to this procedure.

We had eighteen suits reported last year as at issue, or to be revived. This year we have had ten new suits added to the eighteen and another, which was refused on account of non-payment of the defense fee at the time of the alleged malpractice, and one threat, which was stopped without suit by the payment of ten dollars by the defendant.

Of the twenty-eight suits in the last year, fifteen are pending, so far as this committee is informed. Two took non-suit and can yet be revived, and one is on the retired docket to be thrown out of court, and one was thrown out.

Two suits were withdrawn, of course, by the plaintiff. One was compromised by the defendant and without the knowledge of this committee for \$100.00, and five won and one lost, for which an insurance company paid \$400.00.

That leaves us fifteen suits pending. One on retired docket and two non-suits, which may or may not be revived, which is the same number, viz: eighteen, when our last report was made. Some of this number may at this date have been finally disposed of, but report has not yet reached the committee.

We want to call to your mind again the attitude of our defendant members. Their first information is often given to their local secretary, or the state secretary, and occasionally to some doctor friend to report to this committee. Sometimes it is in the form of a ten-word telegram. When the details are requested a full report is rarely made in the first letter or two. It appears the doctor is too excited for words.

When the case is finally won, or has passed several trial periods, and has good prospects of being dropped, or thrown out of court, on account of the plaintiff's indifference, or has been compromised for a nominal sum, it is most difficult to get a report from the doctor.

A few are very prompt and businesslike in their reports and very grateful for our systematic and businesslike co-operation.

It is with great difficulty that we have been able so far to stay within the limit of our income from the \$1.00 Medical Defense fee.

The fact that many members, particularly those in the larger cities, have old line insurance, and are defended by the insurance company at their expense, usually saves us the expense of attorney's fees, but we always offer to give our moral support and help in every way we can and stand ready at all times to furnish counsel to defend the suits.

Of course the insurance company is responsible for a verdict and the cost of the defense, and expect their counsel to direct the defense of the suit, but if we had sufficient funds it would

be a good plan for us in all cases to have an associate counsel. While the defense of the insurance company is no doubt efficient, an associate counsel would be a valuable addition, and from a moral and organization standpoint would probably be worth while, but the amount of funds which we receive at the present time does not justify any expense other than what is absolutely necessary.

Counties	1923	1924	1925
Anderson	13	11	11
Bedford	15	14	16
Bradley	13	14	14
Blount	25	23	24
Campbell	12	13	11
Carroll	5	5	8
Coke	--	5	8
Chester	--	--	6
Crockett	--	--	7
Cumberland	2	3	3
Coffee	4	5	1
Davidson	225	223	224
Dickson	5	8	15
Dyer	19	13	14
Decatur	--	1	--
Fayette	1	1	--
Franklin	--	--	7
Gibson	16	18	16
Giles	2	21	22
Grundy	5	7	6
Greene	21	16	11
Grainger	5	--	--
Hamblen	11	15	16
Haywood	1	7	--
Henderson	8	5	5
Hamilton	117	106	105
Henry	10	9	4
Hickman	4	5	7
Jackson	4	5	4
Jefferson	2	9	9
Knox	127	121	125
Loudon	8	7	6
Lauderdale	21	16	18
Lincoln	12	13	13
McMinn	14	15	13
McNairy	12	9	4
Marion	7	--	--
Macon	9	7	8
Marshall	2	1	3
Madison	37	36	32
Montgomery	13	15	18
Maury	28	25	27
Monroe	10	10	11
Obion	10	8	6
Overton	5	5	5
Polk	11	10	8
Putnam	11	11	9
Rhea	1	7	3
Rutherford	19	20	15
Roane	16	18	16
Robertson	9	8	15
Scott	9	9	10
Shelby	192	195	221
Smith	12	10	11
Sumner	15	17	16
Tipton	19	12	15
Washington	29	29	32
Weakley	13	9	5
White	13	12	9
Williamson	7	6	7
Wilson	11	15	12
Warren	5	4	5
Hardin	4	--	1
Lawrence	--	8	7
	1,256	1,251	1,279

To May 1, 1926, for numerous counties, \$297.

I have not the report of Dr. Crook. Some of you know that the bank in which Dr. Crook kept the Committee's funds failed and we did not have anything. I thought the Trustees had a right to take care of our expenses but they did not think so. Dr. Crook therefore borrowed sufficient money on his name to take care of this fund. I have wired his secretary to send me a statement, because I think the House of Delegates should instruct the Treasurer to take over these funds and reimburse Dr. Crook for the money he has borrowed.

There are several things we ought to take up. Our Secretary has told us about the proposed work. Some time we will get a full time secretary and if we do we ought to give him sufficient funds to handle. Another thing is whether or not it is time to make the one dollar medical defense fee compulsory. We can do that by raising the dues of the State to \$5.00 and make \$1.00 for medical defense. When we make our councilor's reports we can tell what percentage of doctors pay the medical defense fee. In my district four counties guarantee the medical defense and four do not.

THE SECRETARY: Dr. Miller referred to Dr. Crook. Within the last few days I learned that Dr. Crook's health had failed. The matter of the funds of the Medical Defense Committee came up some month ago. You are all familiar with the failure of the Peoples Savings Bank of Jackson, Tenn. In that bank there were funds amounting to approximately \$1,600 in possession of Dr. Crook as treasurer of the Medical Defense Committee. The bank failed; Dr. Crook wrote me requesting that I see Dr. Manier, the Treasurer, and see if he would not disburse out of the general fund of the Association an amount to cover the loss in the bank failure. May I digress here and say that the method of handling the funds of the Medical Defense Committee was rather unsatisfactory. The funds would be sent to the Secretary's office, the checks would be cashed there, another check would be issued and signed by the Treasurer and sent to Dr. Miller at Knoxville, who would countersign it and send to Dr. Crook at Jackson. So in re-drafting the new constitution and by-laws we incorporated a section whereby all funds of the Association should be in the possession of the Treasurer who shall deposit them in a national bank and who shall be required to give bond, paid for by the Association.

When the matter of transferring the money of the Medical Defense Committee was put up to Dr. Manier he refused on the grounds that he had no authority to transfer funds from one place to another. Technically I agreed with him. Dr. Crook then borrowed some money on his own account and it was very commendable on his part to do so.

If I am in order I will move that the House of Delegates instruct Dr. Manier, our Treasurer, to reimburse Dr. Crook in full with interest for the money he borrowed for the maintenance of the Medical Defense work.

DR. J. O. MANIER, Nashville: I want to endorse what Dr. Gallagher said about the reimbursement of Dr. Crook. It created a rather embarrassing position. I felt at the time that it was our duty in a moral sense to see them through but in the old constitution and by-laws there was nothing we could find to justify the Treasurer to draw a check for that amount. I do not think any of us can be too careful in handling public funds. I want to endorse Dr. Gallagher's motion.

DR. S. R. MILLER, Knoxville: Dr. Crook, Dr. Shoulders and I are agreed on a method we are to employ now. When a case comes up I have to wire Dr. Gallagher to find out if the member has paid in order to know whether or not he is entitled to defense. Sometimes we have not time to do that in these malpractice cases.

DR. DUNCAN EVE, Sr., Nashville: Where did that \$1,300 in the bank come from? Was it borrowed by Dr. Crook? Was it money from the Society that was deposited by Dr. Crook?

DR. S. R. MILLER: It was money which was deposited by Dr. Crook to carry on the work of the Committee. Dr. Crook borrowed about \$1,300 on his own name after the bank failed. I would like to ask Dr. Gallagher to hold his motion until tomorrow.

THE SECRETARY: I am perfectly willing to wait but I feel so grateful to Dr. Crook in this matter that I feel regardless of the amount we are going to pay, we might as well pass the motion now.

DR. MILLER: The House of Delegates is going to authorize the payment of the note. Let us wait until I hear from Dr. Crook's secretary.

DR. W. B. BURNS, Memphis: It does not seem that there will be any time saved. We might just as well pass it now. I am in favor of the motion and the question.

(Motion carried.)

THE SPEAKER: There is just one other feature of this transaction that might as well be settled now as later, that is, that Dr. Crook or whoever is in charge should turn over whatever funds may be recovered from the Peoples Savings Bank, as part of the assets.

DR. L. L. SHEDDAN, Knoxville: Is there any provision in the by-laws and constitution whereby the trustees can handle such a matter as this when it comes up? I think the trustees should have the power.

DR. A. F. RICHARDS, Sparta: That is covered in the revision of the constitution and by-laws which the Secretary just referred to. All funds will now be turned over to the Treasurer to hold as Society funds on which all drafts will

be made to pay all obligations, just as is now done for the journal.

DR. L. L. SHEDDAN, Knoxville: I mean in the emergency Dr. Crook met with.

THE SECRETARY: Now if the bank fails all the State funds will be lost.

THE SPEAKER: Regarding the matter I referred to about the deposit being turned over to the Treasurer, if we are going to assume the Committee's liabilities, then we take over whatever assets the Committee has. There was no reference to that in Dr. Gallagher's motion.

DR. A. F. RICHARDS, Sparta: I understand from the motion made by Dr. Gallagher that it just holds Dr. Crook innocent of any loss. Naturally any funds that are in the bank belongs to our Committee. The amount of money that Dr. Crook now owes we are proposing to pay. Any money that may accrue after the thing is settled will belong to the Medical Defense Committee and Dr. Crook will not claim that.

DR. W. K. SHEDDAN, Columbia: I move you that all moneys in the Medical Defense fund be turned over to the State Treasurer.

DR. T. R. RAY, Shelbyville: Dr. Crook will not have this balance to turn over until the bank has made its final settlement. I will amend Dr. Sheddian's motion that Dr. Crook request the bank officials to turn over in their final settlement any money due to Dr. Crook.

DR. W. K. SHEDDAN, Columbia: I do not accept that amendment.

DR. DUNCAN EVE, Sr., Nashville. There is no need of any amendment. Dr. Crook is a very sick man. His estate is amply able to take care of this matter.

THE SPEAKER: Dr. Sheddian's motion was not seconded; Dr. Ray's amendment was not seconded.

DR. T. R. RAY, Shelbyville: I move you that in settling this fund that Dr. Crook be asked to notify the bank officials that in its final settlement any funds coming to the committee from this fund be turned over to the Treasurer of the Tennessee State Medical Association. (Motion seconded.)

DR. DUNCAN EVE, SR., Nashville: That is reflection. It is not intended, of course, but I want to state that I will be responsible for every dollar of that money being returned to this Society.

THE SPEAKER: As I understand Dr. Ray's motion there is no reflection intended; it is simply to get it clear that the Society take over what assets remain as well as the liabilities.

DR. T. R. RAY, Shelbyville: I did not mean any reflection on Dr. Crook.

(Dr. Ray's motion carried.)

THE SPEAKER: In the Secretary's report the matter of the Rutherford County charter does not go to the committee that was appointed to consider the report, but goes to the Council. I

would suggest that Dr. Miller have a meeting of the Council to consider that matter.

Adjournment until 9 a.m., Wednesday.

WEDNESDAY MORNING SESSION

The Wednesday morning session was called to order at 9:15 by the Speaker of the House.

REPORT OF COMMITTEE ON CANCER

Dr. W. B. Burns

There is no particular occasion for a report on cancer from the State Committee nor from the larger body, the American Society for the Control of Cancer. The director of the national society went to Europe last year to study the cancer problem, so there was no particular propaganda put out last year except through the medium of the press, and therefore this committee had nothing to do. The chairman had appointment with the national director at Dallas but failed to see him; he saw the first vice-president, Dr. Wood, and the field man, Dr. Wild, and they agreed to assist in every way possible and to secure copies of the handbook on cancer for the members of the State Society. There has been no Cancer Week in some sixteen or eighteen months. The American Society for the Control of Cancer has several motion picture films which the State Society can have at any time. Talking it over with some of the members of the State Society, it was the opinion that the work had probably been overdone in the state. The chairman's experience is that many men are getting tired of it. It will probably do more good at a later period.

DR. J. C. WILSON, Rockwood: I move that the report be accepted. (Motion seconded and carried.)

REPORT OF COUNCILLORS

First, Second, Third, Fifth, Sixth, Seventh, Eighth, Ninth and Tenth Districts

DR. W. K. SHEDDAN, Columbia: I think the reports from these Councillors show some things that are conclusive. The report of the Second District shows what work an active Councillor can accomplish. In the Seventh District we have accomplished a great deal in the past two years. The Councillors are responsible for the conditions that exist in the districts.

DR. W. A. HOWARD, Cookeville: I have a little resolution that I wish to present and I want to preface it by making a few remarks concerning the smaller county, of which I happen to be a member. In our county, Putnam, we have a number of regular meetings, and at some of the meetings have scientific papers. The men who belong to the larger counties and the larger medical societies I am sure cannot understand exactly what we are confronted with in the smaller counties. The men do not care so much about hearing me or one of the other men they are associated with daily nearly so much as they do some man from another county. We have met

with the White County Medical Society a few times during the past year. The State Department of Health is always ready to do anything to help out the smaller county. I wish to present the following resolution:

Whereas, A close co-operation between organized medicine and the State Department of Public Health is vital to medical progress; and,

Whereas, The State Department of Public Health is making every effort to conform its activities to strictly ethical lines of preventive medicine, and to aid the rural physician in his arduous work in the prevention and cure of disease; and,

Whereas, We feel that local physicians in a county are excellent judges of the character of health work most practical in their particular locality; and,

Whereas, We recognize the fundamental importance of perpetuating the integrity of the County Society; therefore, be it

Resolved, That the State Department of Public Health be asked to furnish a physician to meet with every County Society in the State as often as practical; to read a paper on some timely topic, and to use all efforts to increase interest and to extend the usefulness of these County Medical Societies.

DR. J. W. SANFORD, Ripley: It looks to me as though the Public Health Service and several other services were trying to take hold of the medical profession. It will keep on until you will have to go to Washington to find out whether you can take a dose of quinine. We send specimens to the State laboratories and we may get a report in a week.

DR. T. B. WINGO, Martin: I think I can give the reason for the low attendance at meetings in our county. We have too many societies.

DR. J. W. SANFORD, Ripley: I move that the resolution be tabled. (Motion seconded and carried.)

DR. M. S. HERRON, Jackson: I do not believe that any of these men have stated the real reason for lack of interest in my district. I have taken the pains to make several trips to get the members together. The whole trouble in my opinion is what you might term the grouping of the doctors into group practice.

THE SPEAKER: I want to ask Dr. Herron one question. This Tri-State Society does not hold a charter from the State Society. Would it not be possible to have the individual counties take out a charter?

DR. M. S. HERRON, Jackson: I do not know.

DR. T. B. WINGO, Martin: We tried to do that with the Tri-County and they would not do it.

DR. L. L. SHEDDAN, Knoxville: With regard to the Tri-County Societies, we have one that has been in existence eight or nine years. It has been recognized by this Society for about eight years. I want to know what is the matter

with West Tennessee. We have 135 doctors in Knox County and we have 125 members at every weekly meeting. The trouble with your men is that they do not get together. If you eat with a man it is hard to feel he is bad. We have friction in Knox County, but we have an average attendance of thirty-five or forty. If a man on the other side reads a paper, we go over and hear him, and then his crowd comes over to our meetings. Raise your dues. If you have fifty cents dues, people think it is a fifty-cent society. If your dues are ten dollars, they will think it is something worth while. When the dues are fifteen dollars they run over each other to pay them. There is no question but if the dues are low the members think the Society is no good.

DR. S. R. MILLER, Knoxville: Next year I am going to send copies of the Journal to the non-members in my district asking them to join. Now with the good roads the men are better able to attend the meetings. I am going to write each County Secretary and ask if he wishes a speaker furnished for the meetings.

DR. W. K. SHEDDAN, Columbia: I move the adoption of the Councillors' report. (Motion seconded and carried.)

REPORT OF THE AUDITING COMMITTEE

DR. J. W. SANFORD, Ripley: The committee examined the Treasurer's report and found everything correct, and have so signed the report.

DR. W. K. SHEDDAN, Columbia: I move that the report of the Auditing Committee be accepted. (Motion seconded and carried.)

Adjournment until 2 p.m.

WEDNESDAY AFTERNOON SESSION

The Wednesday afternoon session was called to order at 2:30 p.m. by the Speaker.

REPORT OF THE CHAIRMAN OF THE COUNCIL

Dr. S. R. Miller

The matter of the new charter petitioned for by the Rutherford County Medical Society has been under consideration. We have also another petition signed by nearly half the men who signed the first petition, asking us to take no action. The matter has been turned over to the Councillor of the District. No action is necessary by the House of Delegates.

Second, I have a letter from Dr. Crook's secretary stating that the \$1,000.00 borrowed from the bank by Dr. Crook was due on April 15. As Dr. Crook was out of the city, the bank debited the account for that amount and cancelled the note. Had this note not been paid the balance would have been \$1,278.21. The balance is now \$278.21.

I would like to have some one make a motion delegating the chairman of the Medical Defense Committee to ascertain the expense, including interest, that Dr. Crook has been put to and to

reimburse him for same, and asking that any assets that may accrue from the bank failure be turned over to the State Treasurer, as part of the defense fund.

DR. W. K. SHEDDAN, Columbia: I move that the suggestions of Dr. Miller be carried out. (Motion seconded and carried.)

REPORT OF COMMITTEE TO CONSIDER SECRETARY'S REPORT

Dr. J. Howard King

The committee appointed to consider the Secretary's report came to the following conclusions:

First. That a committee of three men composed of the Speaker of the House of Delegates, the chairman of the Council, the Secretary of the State Medical Society, be appointed to select a man to write a history of the Tennessee Medical Society for 100 years ending in 1930 for the Centennial.

Second. That the place of the Centennial meeting in 1930 be in Nashville. This can be done either by calling a special session which can be held by call of the President or on petition of twenty delegates.

Third. That the House of Delegates confirm the action of the President and Secretary in appointing Dr. H. L. Fancher as delegate pro tem to the American Medical Association meeting at Dallas.

Fourth. That a committee be appointed composed of the Speaker of the House of Delegates, the chairman of the Council and the Secretary of the State Medical Society, for the purpose of working out plans for post-graduate instruction in rural communities, for periodic health examinations and for the employment of a field secretary to carry out the above measures operating chiefly under the instructions of the State Medical Society.

DR. W. K. SHEDDAN, Columbia: I move that this report be taken up in sections and acted on in sections. (Motion seconded and carried.)

DR. DUNCAN EVE, SR., Nashville: In reference to Section 1, I desire to state that the committee, composed of Dr. Savage, the late Dr. Roberts and myself, appointed three years ago to prepare a history of this Association, placed the matter in the hands of Dr. Roberts. I am very glad to state that before his death the committee met and went over the material which he had prepared. The manuscript is quite exhaustive, making a large volume, and is now in my hands. It covers the entire history of the Association with the exception of last year's meeting and this year's.

DR. W. K. SHEDDAN, Columbia: I move that the present committee be continued and be furnished enough money to complete its report and turn it over to this Association.

DR. DUNCAN EVE, SR.: It may be wise

for another committee to revise this manuscript and perhaps shorten it. It is a valuable document and a document that is historical.

DR. H. H. SHOULDERS, Nashville: I move that the motion be amended in respect that the present committee be continued and that they be empowered to employ such help as may be necessary to complete the work and submit it at the next meeting.

DR. DUNCAN EVE, SR.: Since one of the members has died I would be very glad if some one be appointed in Dr. Roberts' place.

THE SPEAKER: That was taken care of last year.

DR. DUNCAN EVE, SR.: That is more responsibility than I wish to assume. We would be very glad to have you appoint some one. I would be very glad to have this done so that we can report at the next meeting.

THE SECRETARY: Perhaps a word of explanation is due to the House on account of the action of this committee. It is possible that I had the wrong conception of the completion of this work. My conception was that the document was complete as far as data collection was concerned, but that the history had to be written. If Dr. Roberts wrote the history it would be absurd to go beyond that. It would be my judgment that the document just as he wrote it could be given to the printer.

DR. H. L. FANCHER, Chattanooga: I think the object of this committee was to supply the very thing Dr. Eve mentioned, to supply one man to help out the committee.

DR. W. K. SHEDDAN, Columbia: A committee to revise any historical work that Dr. Roberts had done would spoil it. I do not believe there was any man who lived in Tennessee in the last fifty years who could do the work as Dr. Roberts had done it.

DR. DUNCAN EVE, SR.: I believe it would be a very good idea to have this presented in form to this House of Delegates and that a special committee be appointed to revise or examine the work thus far prepared and report at the next meeting. The only criticism I might make on the work is that of its great magnitude. It may be necessary to omit some of the data.

THE SPEAKER: I think Dr. Sheddán's motion carries with it the authority to add to the committee by the chairman, and if he requests other gentlemen to serve with him he has that right. I think it would be well to leave it that way.

DR. DUNCAN EVE, SR.: If it is left to the chairman and agreeable to this Association, I would like to ask that Dr. Miller be added to the committee. (Motion seconded.)

The motion as made by Dr. Sheddán, with the amendment suggested by Dr. Eve, was carried.

THE SPEAKER: We will now take up Section 2.

DR. A. F. RICHARDS, Sparta: I think in regular rotation that the 1930 meeting would be in Nashville.

DR. W. K. SHEDDAN, Columbia: I would like to suggest as an amendment that the first day's meeting be held in Murfreesboro, the city in which the Society was organized.

DR. R. CALDWELL, Nashville: I move that we delay action on the 1930 meeting place. (Motion seconded.)

DR. J. HOWARD KING, Nashville: I believe it should be settled now.

DR. L. T. STEM, Chattanooga: I move that Dr. Caldwell's motion be tabled. (Motion seconded and carried.)

DR. DUNCAN EVE, SR., Nashville: I move that we adopt the resolution. (Motion seconded and carried.)

THE SPEAKER: We will now take up Section 3.

DR. L. L. SHEDDAN, Knoxville: I move that it be accepted. (Motion seconded and carried.)

THE SPEAKER: Section 4 is now before us.

DR. J. W. SANFORD, Ripley: I move that we table that section. If you leave that section in you will have to change the Constitution. That should be left to the Board of Trustees.

DR. L. L. SHEDDAN, Knoxville: I want to read the last resolution with Dr. King's permission. I move you that this be adopted with the striking out of those two recommendations and let this committee consider the advisability of appointing a full-time or field secretary, leaving out the question of periodic health examination and post-graduate work. (Motion seconded.)

The reason is that I would like to get a ruling from the Speaker of the House whether it would be possible for this House to take action toward employing a full-time secretary. The Constitution and By-Laws speak about the duties of our Secretary, also about the duties of the Board of Trustees. Will the Trustees have the power to employ an all-time secretary without action of this House of Delegates, or will it take an amendment to the Constitution and By-Laws?

THE SPEAKER: My understanding is that you can employ any one you need for the purpose of carrying out the wishes of the Association. The only authority I see you would have to have is the authority to pay salary. We have no authority to disburse funds except as stated in the Constitution and By-Laws.

DR. A. F. RICHARDS, Sparta: I doubt the ability of the House of Delegates to create new officers under the By-Laws and Constitution. It reads that there shall be a President, three Vice-Presidents, a Secretary, a Treasurer and Councillors. The idea incorporated in this Constitution is that there will be a Secretary elected for the transaction of such business as would come before the Secretary annually. The salary is stated. I think it would be necessary to revise

the Constitution to read, a full-time or field secretary, with a stated salary. It occurs to me that the proper way to get at that would be by a resolution submitted to revise the by-laws.

DR. W. C. DIXON, Nashville: I am very vitally interested in this recommendation and I am heartily in favor of the recommendation as presented by the committee. It seems to me we are splitting hairs on the Constitution. It does not make any difference what you call this field secretary, call him a stenographer if you want to. We do not specify in the Constitution how many stenographers we want. Dr. Sheddan's suggestion is to employ a man and have nothing for him to do. He wants to throw out of consideration the periodic health examination and the post-graduate instruction to county societies. If those are thrown out I see no necessity for having a field secretary. I do feel that since we have money available to make progressive movements, and since these are progressive movements, things that any individual will see are of value to organized medicine and the public, we should not quibble over a violation of the Constitution. I think Dr. Sheddan feels that periodic health examinations are a good thing for medicine and the profession at large as well as the public. The question of periodic health examinations is getting into the hands of commercial organizations. They engage doctors for a small fee. That work should be done by organized medicine. One of these organizations has eight thousand doctors examining people. The patient pays a fee of \$25.00 and the doctor receives \$5.00 for his examination. I think we should take hold of this ourselves and carry it out. The question came up today of organizing the county societies. They are not organized. If we had a man devoting his whole time to our work he could organize these counties that are not organized. Personally I hope the House of Delegates votes to adopt this resolution.

DR. L. L. SHEDDAN, Knoxville: I would like to make myself clear. The Constitution specifies the duty of the Secretary. (Reads section.) The question of whether or not we could do this constitutionally without an amendment to the Constitution and By-Laws came into my mind. Dr. Dixon is just a little bit in error on my position. I have no objection to periodic health examination; I am heartily in sympathy with it and also in the carrying of post-graduate instruction to the rural districts. Do not let us bite off more than we can chew. I think the need of this Society is a full-time secretary-editor, and let him do what Dr. Dixon suggests, visit the different sections of the state and increase in that way our membership. How are you going to organize post-graduate work on \$14,000? It will take quite an extensive program to carry it out. The history of the states which employ a full-time secretary is that they have almost doubled their

membership. Pay him a salary sufficient to justify employing a competent man. After you have your work thoroughly organized with an all-time secretary, put over these activities. As far as periodic health examination is concerned, it is not up to the State Secretary; it is up to the local doctors.

THE SECRETARY: That is not the idea.

DR. W. C. DIXON, Nashville: It is to supervise the work.

DR. L. L. SHEDDAN, Knoxville: That should be done by the local society. Our all-time secretary can do that in the county societies. Our former President of the American Medical Association, W. D. Haggard, has been over the state with us talking periodic health examination and we are heartily in favor of it. It is up to the public to apply to their family doctor for such examination.

DR. DUNCAN EVE, SR., Nashville: With all due respect to an all-time secretary, I do not believe that is the proper thing for this Association. I am opposed to it.

THE SECRETARY: I would impress upon the members that the recommendations in this Secretary's report were made after mature deliberation and study. I give more thought to the profession and to organized medicine than any member of the State Association for the reason that it is my duty to do it. I have thought this matter over carefully; I have consulted with a number of the members whom I thought had the interest of the profession at heart and who had vision and outlook and who thought we must go forward. Dr. Sheddan seems to be laboring under the impression that it will be an extremely expensive proposition. I am sure that he does not understand the manner in which this is being carried out in other states. In some states the movement is actually self-supporting. I was charged with the duty of finding out the sentiment of the state in regard to this, and as I said in my report, I visited the sectional societies. I do not think it is necessary to take up the time of this body to go into detail of the plan that is being carried out in these states successfully and as I saw it in some cases, with financial remuneration. It is my observation that there is need for the work. There seems to be a misunderstanding regarding periodic health examination. It was the farthest thing from our minds to have a man travel from town to town examining the population. What was contemplated was to sell this thing to the physicians, to use the Kiwanis slogan. In the whole history of our profession it is the first great preventive measure that is given to the physician to prolong life and at the same time redound to his financial benefit. At the same time this work is done, post-graduate medical instruction can be begun. A man who resents graduate medical instruction is fundamentally wrong because everyone who attempts to do any-

thing professionally speaking does post-graduate work. The idea is only to bring it to the man instead of having the man go after it.

Another point I have tried to bring out in this report is something that I knew would meet with opposition because it is new, because it appears to be radical, but it is progressive and has already been found to work in a number of states. North Carolina, Georgia, Pennsylvania, Michigan, Illinois, Minnesota and Wisconsin have attempted these two things and they are working. We have got to have an all-time secretary if you are going to progress. There is no man in this room who has any conception of the amount of work involved in the double role of secretary-editor. I have neglected my practice to carry out these duties. If you do not want to adopt these suggestions it is up to you. If you want to throw it in the ash heap I am with it. The question of Constitution and By-Laws came up. The question of whether I shall employ a porter or a stenographer or a typist does not have to be set forth in the Constitution. I am frank to say to you that like Dr. Dixon this is a constructive feature that has been very close to my heart. I have no particular desire to be Secretary—I want that distinctly understood, but I do have the interests of the profession at large and I want to give them the benefit of what I have learned and I want to give them the benefit of this constructive program. I feel I am too big to go into petty politics to put over a message like this. If you want it, here it is; if you do not want it, do not take it.

DR. S. R. MILLER, Knoxville: I am in favor of this if you can carry it on. I am carrying on periodic health examinations. I would like to ask how many men would be necessary to carry on post-graduate work.

THE SECRETARY: About a half dozen. In the states in which this has been established they have a man, like the old circus rider, who goes ahead to stimulate interest by personal contact. It would be known in one county that a certain man would deliver a lecture there on one day, in the next county the next, and so on. At another hour another man would give a different lecture and so on. There are lots of men who would be glad to give such a course just for their expenses. As to the number of hours a day it would take, you could not expect a man to leave his practice for a whole day at a time. I should think two or three hours a day would be sufficient.

DR. DUNCAN EVE, SR., Nashville: It occurs to me that the reason we are in controversy about this matter to which our Secretary has given a great deal of thought and time, is that it is new, and secondly, we have several thousand dollars which has taken a number of years of accumulate and we do not like to see it spent. It occurs to me that the logical way to handle this would be for the Chair to appoint a committee to work

in conjunction with our Secretary, who has the data and who is thoroughly sold on the idea, and let this committee bring in a detailed report. In the meantime we will inform ourselves about the question.

THE SECRETARY: The trouble about that is that in any sort of organization the power has to be delegated to somebody. We have a very representative and full meeting of the House of Delegates here today. They will adjourn and go back home and not give this a thought and the next House of Delegates will be entirely different and the new delegates will not be conversant with the question.

DR. J. C. WILSON, Rockwood: I want to rise as being heartily in favor of this resolution. It is a progressive step. It is for our benefit and the benefit of our people. For that reason I think we ought to adopt this resolution without any more consideration and put it in action. If it is a good thing it ought to be in action. This educational part of it is all right. This morning I voted for a resolution thinking I was voting against it. I have been sending reports to the state laboratories and getting prompt replies.

DR. W. K. SHEDDAN, Columbia: This discussion has gotten away from the point. It is not a question of the value of periodic health examination or of post-graduate work; it is not a question of who wants it and who does not want it. The question is the best way to get at it. I am for a full-time secretary. I have no criticism of either the President or the Secretary in this matter. I am not going to criticize our Secretary as an Editor, but we do not have enough editorials in our journal. The Illinois State Medical Journal is discussing every problem.

THE SPEAKER: I think we are all digressing from the motion. The motion does not carry with it the adoption of periodic health examination nor post-graduate work. I would request that you state the motion.

THE SECRETARY: Dr. Sheddan's motion was to adopt the last paragraph of the resolution, the employment of a full-time secretary.

DR. L. L. SHEDDAN, Knoxville: We are unfortunate in calling it a full-time secretary.

DR. H. H. SHOULDERS, Nashville: I do not think that much could be added to what Dr. Gallagher said in explanation of his report. The American Medical Association only recently endorsed this very movement and voted on it. We might speak about the economic question that seems to disturb Dr. Miller and Dr. Sheddan, but the experience has been that the membership has been built up as a result of the adoption of these plans. Unfortunately, the term field secretary has been used. Instead of calling it post-graduate work, call it a co-operative unit for a county program. I think those of you who heard the Councillors' reports will agree with me that not fifty per cent of the counties had programs. We

could select men from the larger counties to give these lectures. Another thing, in periodic health examination the doctor would be very backward about advising his patients to come to him and pay a fee for such examinations. An outsider would come in and tell the people that such a thing was worth while and they should go after it. I would move that Dr. Sheddan's motion be tabled. (Motion seconded.)

DR. L. L. SHEDDAN, Knoxville: I want to say to this Society that no man here appreciates more than I do the interest Dr. Gallagher has taken in making out this report. I think the plan is ideal probably, but we sometimes become too ideal and have got to be practical. I think the first step to be taken is to provide an all-time secretary. This is not a criticism of or an objection to periodic health examination, for we have gone on record in our local society regarding it.

THE SPEAKER: The motion to table Dr. Sheddan's motion has been made and duly seconded, I will call for the question. (Motion carried—twenty-five in favor of tabling, six against.)

DR. A. C. LEWIS, Memphis: I move the adoption of the resolution offered by the committee in the beginning. (Motion seconded.)

DR. W. K. SHEDDAN, Columbia: I move to table Dr. Lewis' motion. (Motion seconded by Dr. Sanford; motion to table motion lost.)

DR. A. C. LEWIS, Memphis: I cannot see why we should ask that this resolution be laid aside for another year. We have shown by making these men President and Secretary that we respect them; they have given thought and study to this question and they come here and give their opinions honestly. For that reason I think this resolution should go through and I would like to have a vote for it.

(Motion to adopt the committee's report carried.)

THE SPEAKER: This brings us down to the election of Councillors. We have for election Councillors from the First, Third, Fifth, Seventh and Ninth Districts.

ELECTION OF COUNCILLORS

The election of Councillors resulted as follows: First District—C. P. Fox, Greeneville.

Third District—H. L. Fancher, Chattanooga.

Fifth District—J. P. Taylor, Wartrace.

Seventh District—B. F. Nolen, Franklin.

Ninth District—E. H. Baird, Dyersburg.

THE SPEAKER: One matter I wish to call attention to is that in the election of Dr. Fancher as Councillor of the Third District, the question arises whether Dr. Breeding, the former Councillor, is still eligible to serve on the Nominating Committee.

DR. S. R. MILLER, Knoxville: The Councillor can serve until the final adjournment of the House. That is embodied in the new Constitution and By-Laws.

Adjournment until 9 a.m., Thursday.

THURSDAY MORNING SESSION

The Thursday morning session was called to order at 9:15 a.m. by the Speaker.

DR. W. B. BURNS, Memphis: Shelby County is entitled to six delegates and only four are present. Dr. Williamson is here and I would ask that he be seated as a delegate.

THE SPEAKER: If there is no objection we will ask the Credentials Committee to seat Dr. Williamson as delegate from Shelby County.

REPORT OF THE NOMINATING COMMITTEE

Dr. W. K. Sheddan

President—E. R. Zemp, Knoxville (elected); J. M. Clack, Rockwood; W. F. Christenberry, Knoxville.

Vice-President—T. B. Yancey, Kingsport (East Tennessee); W. F. Cannon, Fayetteville (Middle Tennessee); J. L. Dunnavant, Henning (West Tennessee).

Secretary—J. F. Gallagher, Nashville.

Speaker—H. B. Everett, Memphis.

Trustee—J. L. Jelks, Memphis.

On motion, duly seconded, the above nominations were approved and the officers duly elected.

DR. J. G. GALLAGHER: I want to assure you of my appreciation of my re-election. I realize my shortcomings and accept this with the hope of renewed effort, feeling that I have added greatly to the burden of the office by these matters that were threshed out yesterday. I assure you that I will do my very best to make the Secretary's office a success and especially these innovations we have adopted. I thank you very much.

THE SPEAKER: I appreciate the re-election. I tried to do the best I could for the last two or three years. I will continue to do my best.

DR. L. L. SHEDDAN, Knoxville: The Nominating Committee did not make any recommendations for delegates to the American Medical Association, inasmuch as there will be another meeting of this Association before the 1927 meeting of the American Medical Association.

THE SPEAKER: There is just one feature about that plan which might arise, that is in case of a special meeting of the House of Delegates of the American Medical Association.

DR. H. H. SHOULDERS, Nashville: The delegates that were approved yesterday hold over until next year.

THE SPEAKER: There is one committee that must be elected, namely the Medical Defense.

DR. W. B. BURNS, Memphis: I moved that Dr. S. R. Miller be elected for three years, Dr. H. H. Shoulders for two years, and Dr. J. L. Crook for one year. (Motion seconded and carried and the Chair declared them elected.)

THE SPEAKER: The next order of business is the selection of a meeting place for next year. Invitations have been received from Bristol and Chattanooga.

It was put to a vote, the result of which was 17

for Chattanooga and 8 for Bristol. The Chairman declared Chattanooga the next meeting place.

UNFINISHED BUSINESS

THE SPEAKER: Two important committees, Medical Education and Hospitals, failed to report at this session. I hope the President will try to have these committees prepare a report for next year.

One of the Councillors failed to report yesterday. Dr. Miller tells me that he now has the report.

DR. W. K. SHEDDAN, Columbia: I move that the report be filed with Dr. Miller and published in the Journal. (Motion seconded and carried.)

DR. S. R. MILLER, Knoxville: I was on the committee to revise the Constitution and By-Laws. There were some doubtful points in our minds. One doubtful proposition was whether the other standing committees should be elected by the House or appointed by the President. We could not agree, so we decided to let it go and have only one elective committee, that of the Medical Defense. It may be that some of you will wish some change in the Constitution and By-Laws. That can be done by an amendment. Another thing, we have changed our Constitution and By-Laws so that we do not meet in Nashville every other year.

THE SPEAKER: You have heard Dr. Miller's supplementary report. Is there any amendment to the Constitution and By-Laws to be offered?

DR. L. L. SHEDDAN, Knoxville: Will an amendment offered at this time be acted upon at this meeting?

THE SECRETARY: It will be offered this year and acted on next year.

DR. L. L. SHEDDAN, Knoxville: In view of the fact that in another year we may want to employ a full-time secretary, I wish to offer the following amendment to Chapter 6, Section 4:

The Secretary of this Association shall devote his whole time to the interests of the State Association. He shall be Editor of the Journal and shall visit each councillor district at least once a year and oftener if advisable and assist the Councillors in organizing unorganized counties, and use every means possible to promote the interests of the State Association. Should the Secretary and Councillor deem it wise to organize two or more counties into one society they shall have a right to take such action and such societies shall be recognized by the State Association. His salary shall be _____ dollars as may be determined by the Trustees of the Journal or by the House of Delegates.

Sec. 5. The Secretary may or may not have been a member of the Association or may or may not be a graduate in medicine.

DR. W. K. SHEDDAN, Columbia: My county at the February, 1926, meeting requested me to present the following resolution to this House of Delegates:

Whereas, The Collector of Internal Revenue for Tennessee has ruled that he is required under the law and by the rulings of the Commissioner of Internal Revenue to issue a narcotic license to osteopaths registered in Tennessee, thus enabling them to purchase and use narcotic drugs in their work; and

Whereas, He claims that under the laws of Tennessee he cannot refuse them this narcotic license; therefore, be it

Resolved, That the House of Delegates of the Tennessee State Medical Society be requested and urged to do everything in its power to have a law passed in this state to prohibit any one not licensed by the State Board of Medical Examiners from prescribing and using such drugs.

DR. L. T. STEM, Chattanooga: I move that this resolution be adopted and that we instruct the Legislative Committee to act on it as best they can. (Motion seconded and carried.)

DR. L. T. STEM, Chattanooga: I want to make a motion that this body ask our legislative body to request the next legislature to revise or make a new law requiring the coroners of this state to be medical men. (Motion seconded and carried.)

DR. J. W. SANFORD, Ripley: I would like to make the suggestion that the legislature be asked to have county coroners and county physicians in the same office.

DR. L. T. STEM, Chattanooga: I will accept that amendment. (Motion seconded and carried.)

THE SECRETARY: We have overlooked a matter of vital importance. Next January the legislature is in session. The last time it was in session a sum not exceeding \$1,000.00 was appropriated by this body for the use of the legislative committee.

DR. W. B. BURNS, Memphis: I move that the House of Delegates appropriate a sum not to exceed \$1,000.00 for the expenses of the Legislative Committee. (Motion seconded and carried.)

DR. W. B. BURNS, Memphis: The Harrison Act is up for amendment and the American Medical Association passed a resolution asking that the Senators and Representatives of each state be requested to consider the amendment approved by the Association.

DR. L. T. STEM, Chattanooga: I move that you appoint a committee of three to prepare suitable resolutions to be placed with the Secretary for action.

DR. W. K. SHEDDAN, Columbia: I would make an amendment to that motion that the Speaker appoint a committee of three from each grand division to present the resolution at its next meeting.

DR. L. T. STEM: I will withdraw my motion. (There was no second to the motion.)

DR. W. K. SHEDDAN, Columbia: I move that we adjourn sine die. (Motion seconded and carried.)

The meeting adjourned.



DR. E. R. ZEMP
Newly Elected President of the Tennessee State Medical Association

THE JOURNAL

OF THE

TENNESSEE STATE MEDICAL ASSOCIATION

Devoted to the Interests of the Medical Profession of Tennessee

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J. F. GALLAGHER, M.D. ----- Editor

R. C. DERIVAUX, M.D. ----- Associate Editor

APRIL, 1926

OUR NEW PRESIDENT

In the election of Dr. Ernest Russell Zemp to the presidency of the Tennessee State Medical Association a worthy honor was worthily bestowed on him by his associates. Always active in medical organizations and a clean, ethical gentleman, the Association reflected credit upon itself when it chose him as its leader for the ensuing year.

Dr. Zemp was born of Swiss ancestry in Camden, South Carolina, in 1871. He received his B.S. degree from the South Carolina Military Academy at Charleston in 1890, and his M.D. degree from the University of Maryland (College of Physicians and Surgeons) in 1894, after which he served as interne in the Johns Hopkins Hospital in 1894-5. After leaving Baltimore, Dr. Zemp located in Knoxville in 1895, where he has been practicing internal medicine ever since. During a period of fifteen years he held successively the chairs of Materia Medica and Therapeutics, Pediatrics, Medicine and Clinical Medicine in the Medical Department of Lincoln Memorial University up to the time that this institution merged with the Medical Department of the University of Tennessee.

He is an ex-president of the Knox County Medical Society and ex-president of the East Tennessee Medical Society. Among his hospital connections are the Knoxville General Hospital, Fort Sanders Hospital and Riverside Hospital, to all of which he is visiting physician. Dr. Zemp is married and has two children.

Aside from his unusual ability as a physician, Dr. Zemp is adept in the plan-

ning of entertainments. All those who attended the last meeting of the State Association in Knoxville remember with great pleasure the elaborate and unusual entertainment provided for that occasion. Dr. Zemp is an enthusiastic football supporter and has voiced the hope that he may live long enough to see Tennessee defeat Vanderbilt. His prediction in regard to this is that the time is not very far off.

THE OPPORTUNITY OF THE TENNESSEE MEDICAL SOCIETY

The action of the House of Delegates at the Memphis meeting to arrange for an extension course of medical instruction to the practitioners of Tennessee at their homes, is a most forward-looking movement. It has been a great need for many years. Post-graduate instruction has been restricted to relatively few men. The benefit should be given to every doctor who will receive it as near his home as possible. It will require the services of a full-time man to arrange for these courses. The teachers and clinicians of the larger cities, it is confidently expected, will gladly give of their time and efforts to bring the best things of modern medicine to the county society at regular stated intervals interspersed with clinics. Much material, such as growths, tumors, goiters, deformities, skin lesions, etc., that can be easily demonstrated, can be presented and used as texts. Where hospitals are available, the material which has been carefully worked up, can be presented in an instructive manner. Gross pathological specimens of the important diseases and of the lesions of the great organs can be carried from the medical schools and from the laboratories of pathologists for the elucidation of many morbid processes. Films showing various manipulations in fractures, dislocations, together with certain types of operations, and the management of many diseases, can be utilized in an educational way.

The spirit of study, improvement and research will be inculcated.

Hand in hand with this educational extension course will be the institution of periodic health examinations by the county medical societies. This is not only the greatest boon to the people of Tennessee but it will be a real asset to the medical profession. The determination of diseases in their incipency when they can be cured is most desirable. They will be detected early by an examination on the birthday of each individual. Many diseases if left to themselves are insidious and when finally complained of may be well nigh fatal, whereas if the patient can be frequently examined the slightest abnormality can be appreciated and corrected.

The benefit to the profession will be first that of the consciousness of doing a meritorious service to his fellow citizen; second, improving the health, longevity and well-being of his clientele; and lastly, to render a service that will be of so much value to the patient that the material reward to the profession will be considerable. Now that preventive medicine has curtailed the income of every practitioner and most of the pestilences have been throttled, it remains for the profession to prevent the degenerative diseases of the great organs in middle life. The periodic health examination will do this. Life insurance companies are providing these examinations free of charge to their policyholders. That is all right, but everybody, even though he is not a policyholder, should have this service and should pay his family physician for it himself rather than have the insurance company do it. It makes no difference to the doctor who pays, but the service is so important and valuable that it would be a considerable source of income to the individual physician.

A thorough head-to-toe, intelligent, thorough-going physical examination will mean so much to the patient and be in such startling contrast to the makeshift

methods of the pretenders in medicine that it will do more to show the patient the difference between a regularly qualified practitioner and one who has arrived at his so-called license to practice medicine by irregular and shortcut methods that the people will not stand for that type of physician.

The Tennessee Medical Society has been very judicious, frugal, and saved a considerable sum which can now be expended in the extension of medical education, through every member of the society and the promulgation of the periodic health examination to every person in the state.

The time has come when organized medicine must take its place in the great service to the people in general rather than to restrict its attention to the individual only. Group consciousness in the profession must be stimulated and perfected.

There is no reason why the profession in Tennessee that has always stood in the forefront and the Medical Society of Tennessee, which has had such a long and honorable history, the two great medical universities in this state, together with the Public Health Service and the various non-professional welfare services, should not band themselves together to the end that the greatest possible service be rendered by the profession of this state to the public. Thus will the Tennessee Medical Society come into its own and the kingdom of health will be at hand.

WILLIAM D. HAGGARD.

PERIODIC HEALTH EXAMINATIONS

In the past twenty-five years six years have been added to the average life. This has been brought about by the application of our knowledge of the problems of sanitation and disease prevention. Progress along these lines has been steady and the results stand as an achievement of which every physician can be proud, and for which every individual should be grateful. Mark Sullivan in his recent

book, "Our Times," speaks of this gain in years of usefulness, and emphasizes the point, not often mentioned, that the relief from the fear of many diseases which formerly took a terrible toll, is almost as great as freedom from the diseases themselves. He says that the average citizen was more harrassed by the fear of small-pox than he was by the fear of taxation without representation. With reference to the latter he could take direct action. As to the former he was solely dependent on professional advice.

The acute infectious diseases no longer carry the menace of former years. Children born today have a reasonable chance of reaching maturity. Many diseases that a few years ago had a steady mortality, and a large morbidity, are now more or less medical curiosities. We still, however, have work to do. The movement for periodic health examinations carries as great promise for good as did the application of hygienic and preventive measures.

The yearly examination of the apparently well would disclose many diseases in a curable or controllable stage when much could be accomplished. Years of usefulness could be added to many lives. From the scientific standpoint it would inevitably add greatly to our store of knowledge, particularly with reference to the earliest manifestations of a great group of diseases, with which we are sadly familiar in their fully developed stage, but about which we know little in their earlier development.

Gradually the profession is realizing that this is a task which rightfully belongs to it. Commercial organizations are exploiting the field, but it is to organized medicine that the people look for such service. Its success is dependent upon the general practitioners, and they now have the opportunity to blaze the way in this movement for longer and better lives.

W. C. DIXON.

DEATHS

Dr. Martin P. Boyd of Farmville, aged 88, died April 1st. Dr. Boyd was a graduate of the University of Tennessee, College of Medicine, Memphis, in the class of 1878 and was an honorary member of the Henderson County Medical Society at the time of his death.

Dr. Alfred B. Peck of Knoxville, aged 55, died at his home April 2 of pneumonia. Dr. Peck was a graduate of Vanderbilt University, School of Medicine, in the class of 1899.

Dr. H. W. Harris of Cleveland, aged 32, died April 6th of appendicitis. Dr. Harris was a graduate of the University of Tennessee, College of Medicine, Memphis, in the class of 1917 and was a member of the Bradley County Medical Society.

Dr. W. G. Ruble of Morristown, aged 52, died April 28th of acute indigestion. Dr. Ruble graduated from the Kentucky School of Medicine, Louisville, in the class of 1904, and was a member of the Hamblen County Medical Society.

NEWS NOTES AND COMMENT

Dr. A. T. Perry has moved from Dyersburg to Camden.

Drs. H. A. Nesbitt and J. H. Ledbetter of Clarksville have moved into a building which they have recently had under construction for their own use.

About June 1st Dr. George R. McSwain with his brother, Dr. J. H. McSwain, of Paris will open a private hospital of about eight or ten bed capacity. It will contain x-ray, laboratory and other up-to-date equipment.

Dr. John L. Dies, of Memphis, has just returned, after spending two years in post graduate work in European Clinics. While in Paris, Dr. Dies was elected a member of the Association Francaise de Chirurgie and the Congres Francaise de Chirurgie. He is now located at 1461 Vinton Avenue, Memphis.

In honor of Dr. John B. Steele, Medical Director of the Volunteer State Life Insurance Company of Chattanooga, and who is Chairman of the Medical Section of the American Life Convention, a special train will be operated from Chattanooga to Colorado Springs, Colorado, where the convention will be held. The presidential special, as the train will be called, will stop over in Nashville where the delegates will be entertained at dinner at the Andrew Jackson Hotel by Dr. Rufus E. Fort, Vice President and Medical Director of the National Life and Accident Insurance Company of Nashville. Stop-overs will also be made at St. Louis and Kansas City, where special entertainments have been provided.

BOOKS RECEIVED

YOUNG'S PRACTICE OF UROLOGY. Based on a study of 12,500 cases. By Hugh H. Young, M.D., and David M. Davis, M.D., Johns Hopkins University. With the collaboration of Franklin P. Johnson. Two octavo volumes totalling 1,484 pages, with 1,003 illustrations, 20 being color plates, by William P. Didusch. Philadelphia and London: W. B. Saunders Co., 1926. Per set: Cloth, \$25.00 net.

If the numerous works on Urology which are already in our libraries, were to be suddenly taken from us, and we were left with only the two volumes above mentioned, we should still feel that a complete record of the past and present in Urology was in our possession.

To attempt a review of this work by America's premier in Urology would be but to commend it. The authors have evidently intended that it shall be the last word for the next decade at least, and it is hard indeed to vision its effacement. Rapid as the progress has been during the past quarter of a century in this most highly specialized department in the field of surgery, the authors have not failed to review and credit the voluminous literature which has grown about us, and we must note that they have been the leading spirit, which has stimulated progress.

The volumes are far too extensive to permit even the briefest description of their contents or make up; suffice to say that the pages are fairly scintillating with information, the arrangement is orderly, and there is a gripping interest from the preface to the finale.

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